WEEDS TREES and TURF

FEBRUARY 1974

LABOR MANAGEMENT FOR SUPERINTENDENTS

GREEN GROWS THE BUSINESS

OIL SAVINGS IN BRUSH CONTROL

FEEDBACK FROM ARBORISTS

SPECIAL PULL OUT

HERBICIDES: WHERE IS THE MARKET?

TOTAL TURF CARE IS HERE!

Get a full course of protection against weeds and disease.

Dacthal®

Start your Total Turf Care this year with Dacthal W-75 herbicide. Or use the convenient 5 percent granular form if you like.

Dacthal gets the jump on most annual grasses and broadleaf weeds. This preemergence herbicide prevents weeds as they germinate. Crabgrass and *Poa annua* don't have a chance. Yet, Dacthal is a truly selective herbicide that will not affect established grass. It's even safe for new grass when used according to label directions.

Just one application in early spring will control weeds for a full season. In the case of *Poa annua*, another application in late summer keeps this late germinating pest out of sight.

Don't worry about residue build-up either. Dacthal degrades in one season; it's not persistent in the soil.

Dacamine®

For those areas where broadleaf weeds are a problem, use Dacamine Turf herbicide to sustain your Total Turf Care. Postemergence Dacamine kills dandelion, plantain, poison ivy, knotweed and other broadleaf weeds.

Dacamine is an oil soluble diamine form of 2,4-D which is formulated to be used *only* with water. It combines the weed-killing power of an ester with the safety of an amine. Dacamine stays put—kills the weeds you spray it on but won't vaporize and damage valuable plants nearby. Its unique formulation penetrates waxy weed foliage—then moves all the way to the roots, killing the whole plant not just the top.

Daconil 2787®

Total Turf Care includes broad-spectrum disease control. Daconil 2787 is the one fungicide that solves most disease problems. Why use a group of fungicides to do what Daconil 2787 can do by itself?

Use Daconil 2787 to prevent or cure: Brown Patch, Copper Spot, Dollar Spot, Leaf Spot, Melting Out, Red Thread and more. Many leading golf courses use Daconil 2787 in their disease prevention program.

Daconil 2787 has performed well on over 25 grass species and varieties. Excellent turf tolerance allows you to use it even in hot, humid weather.

Just mix Daconil 2787 with water and spray. You don't need a surfactant. It's compatible with many commonly-used pesticides. Follow label directions for exact usage.

Daconate®

Round out your Total Turf Care with Daconate postemergence herbicide. Get those escape weeds that slipped by your preemerge. Daconate will effectively control crabgrass, chickweed, wood sorrel and other hard-to-kill weeds. It's economical, too.

Daconate is a ready-to-use arsonate liquid, pre-mixed with the right amount of surfactant for maximum coverage and control. Since it is an organic arsenic compound, it does not have the more toxic properties of inorganic arsenic compounds, such as calcium or lead arsenate. For best results, spray Daconate during warm weather when weeds are actively growing.

Ask your turf chemicals supplier for more information or write: Agricultural Chemicals Division, Diamond Shamrock Chemical Company, 1100 Superior Avenue, Cleveland, Ohio 44114.

Be Diamond Sure!

Diamond Shamrock Chemical Company

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CHIPCO TURF HERBICIDE MCPP
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TURF FUNGICIDE
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Buy a Chipco® something, get a Chipco® something else absolutely free.

Why are we doing this?

To help you save money. But, we have something else in mind, too.

Chipco is the best group of products you can use for an effective turf management program.

And we know once you use Chipco anything, you'll soon be using Chipco everything else.

If you buy:	You get free:	If you buy:	You get free:
24 lbs. Chipco Spot Kleen	1 gal. Chipco Turf Herb. MCPP ($ 9.85 value) Or 6 lbs. Chipco Thiram 75 ($ 6.84 value) Or 1 gal. Chipco Spread Act. ($ 6.70 value)	30 gal. Chipco Turf Herb. MCPP	1 gal. Chipco Buctril ($18.54 value) Or 3 gal. Chipco Turf Herb. D ($13.62 value) Or 15 lbs. Chipco Thiram 75 ($17.10 value)
10 gal. Chipco Buctril	6 lbs. Chipco Thiram 75 ($6.84 value) Or 1 gal. Chipo Turf Herbicide MCPP ($9.85 value) Or 1 gal. Chipco Turf Kleen ($7.52 value)	15 gal. Chipco Turf Kleen	1 gal. Chipco Spread Act. ($6.70 value) Or 1 gal. Chipco Turf Herb. MCPP ($9.85 value) Or 6 lbs. Chipco Thiram 75 ($6.84 value)
		10 gal. Chipco Microgreen Liquid	1 gal. Chipco Turf Kleen ($7.52 value) Or 1 gal. Chipco Spread Act. ($6.70 value) Or 1 gal. Chipco Turf Herb. MCPP ($9.85 value)

Chipco Buctril® controls broadleaf weeds in newly planted grasses for sod or seed production.

Chipco Turf Herbicide MCPP controls clover, chickweed, knotweed and other surface creeping weeds and is safe and effective for use on most bent grasses.

Chipco Turf Kleen controls broadleaf and surface creeping weeds with a wider margin of safety around trees and shrubs.

Chipco Spot Kleen is a new systemic fungicide for control of dollar spot, Fusarium blight, large brown patch, copper spot, and stripe smut.

Chipco Thiram 75 prevents and controls large brown patch, dollar spot and snow mold.

Chipco Microgreen Liquid provides long lasting deep green color, more root growth and less desiccation.

Chipco Turf Herbicide D is a general purpose broadleaf herbicide ideally suited where economical control is desired.

Chipco Spreader Activator is a superior adjuvant to increase the efficiency and effectiveness of turf chemicals.

Rhodia
CHIPMAN DIVISION

Note: offer expires April 1, 1974.

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WEEDS TREES and TURF®

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"Serving The Green Industry"

$20 Thousand In Savings Through Labor Management 14
Superintendent Chet Wender, Plainfield Country Club, tells how he is coping with rising costs on all fronts — labor, equipment, chemicals.

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If your business includes dormant spraying, you are probably feeling the fuel oil shortage about now. Here's a way to use dormant sprays with less oil.

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Stan Frederiksen of Mallinckrodt Chemical Works looks at the golf course market for the custom applicator.

Utility Weed Control ..... JJ
Weed control along transmission lines represents a continuing market for the custom applicator. Richard E. Abbott, Ohio Power Company, reports on the potential.

Aquatic Weeds ..... SS
Custom application to control aquatic weeds is becoming more important daily. Jack Murnighan, Pennwalt Corporation, reports on this gigantic new market for spraymen.

Commercial Turfgrass ..... TT
Public transportation routes account for much time and expenditure in weed control. A Pete Nicas, Ciba-Geigy Corporation, examines this vitally important market.

Highway Weeds VV
Green grass rates high with homeowners, business and industry. Gary Johnson, Elanco Products Company, talks about this developing market.

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The Cover

Highway weed control includes the use of environmental protection chemicals and modern mowing equipment. The tractor shown here sports a belly-mounted sickle mower and a trailing flail mower.

THE COVER — Pull Out Section

Weeds and experts make up a big part of the Green Industry. We put them together for this special pull out. Just in case you don't recognize it, the weed is knotweed. Photo was taken just after emergence of this pest.

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A TORO automatic sprinkler system stays out of sight, out of mind while people enjoy your park or recreation area. But when they go home, TORO goes to work . . . solving all your irrigation problems.

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NO MORE PUDDLES — TORO's exclusive valve-in-head sprinklers eliminate line drain puddles and damaged turf. And TORO has made repeat-cycle watering practical. So you automatically get just the right amount of water for your soil and terrain.

THE VANDAL HANDLERS—TORO heads pop up a high 2⅜" (640 series, especially designed for parks) . . . then pop down *below* ground surface, preventing vandalism, mower damage and even serious accidents. There are no protrusions to tamper with . . . or to stick out like sore thumbs on your healthy turf.

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50 YEARS OF PROBLEM SOLVING—TORO's been solving turf care problems for over half a century. And we're still coming up with innovative solutions to special problems. We'd like to take a crack at yours . . . through our network of expert distributors or with more detailed information. Just write TORO Irrigation Division, Dept. W-274, P.O. Box 489, Riverside, CA 92502.

For More Details Circle (114) on Reply Card

"I've played this course for a year and I haven't seen a bad patch of turf yet."

"Funny, I was thinking the same thing!"

For More Details Circle (111) on Reply Card

Compliments on the quality of your turf management are always nice to hear. They make all those long hours of challenging work seem even more rewarding.

Speaking of compliments, we have a way that can help you earn more of them: the Du Pont TERSAN® 1-2-3 Disease Control Program.

Kudos from the greens committee.
With TERSAN LSR applied in the spring, TERSAN 1991 in the summer and TERSAN SP in the fall, you control all major turf diseases on all common turf grasses all season long. Helps keep your turf lush, green and resilient from the day the course opens till the day it closes.

Applause from the finance committee.
Read the label on each bag of TERSAN and you'll be surprised at how little you have to use and how long the protection lasts. Take TERSAN 1991, for example: a systemic, curative (eradicant) and protective fungicide. Just 1 ounce per 1000 sq. ft. applied every 10 to 14 days controls dollar spot on tees.

The TERSAN 1-2-3 Program is also designed to stop costly disease problems before they have a chance to cause trouble. So you get fewer tie-ups of men and equipment, more budget dollars saved.

Praise from your toughest critic.
As a turf professional, the standards you set for yourself are the most demanding of all. With the TERSAN 1-2-3 Program, you can come closer to meeting these standards and win praise from your toughest critic—yourself.

For complete information on this program and a supply of TERSAN turf fungicides, contact your golf course supplier.

With any chemical, follow labeling instructions and warnings carefully.

DU PONT
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TERSAN 1·2·3 DISEASE CONTROL PROGRAM

Editorial

Noxious Weed Law — Who Needs It?

Positive action taken by the House of Representatives has pushed the Federal Noxious Weed Bill into committee in the Senate. This represents a massive step forward. The need for a law curtailing the movement of noxious weeds is long overdue. The bill currently rests with the Committee on Agriculture and Forestry.

In essence, the bill would limit the importation or distribution in interstate commerce of weeds considered by the Secretary of Agriculture to be undesirable. Without forming a definite opinion at this point, let's see what this means.

Almost daily, dealers in Florida ship exotic plants to customers cross state lines. Riding the coattails of these plants are troublesome and dangerous weeds such as water hyacinth, alligatorweed and hydrilla. In no time these plants become firmly established and adapted to a new environment where they reek havoc. One only has to recall how southern grown hydrilla was found in Iowa to understand the gravity of the situation.

Further, noxious weed seed because of its size can easily slip through even the most delicate screening process and be transported in a bag of turfgrass seed. Or foreign produced seed or other host parasites can slip past Federal inspectors at ports of entry. We certainly have enough domestic weeds to control without the introduction of foreign species for which no control is available.

Senate Bill 2728 would clip the wing on these elusive noxious weeds. If passed, Agriculture Secretary Butz in protecting agriculture, commerce or public health could regulate the movement of weeds and make it stick with a penalty of $500 and/or imprisonment. It would be accomplished in three ways: 1. stop the means of conveyance into the U.S. and inspect for noxious weeds; 2. stop the means of conveyance moving through the U.S. or interstate and inspect for noxious weeds; 3. enter, with a warrant, any premises in the U.S. for purposes of any inspections or other actions necessary under the Act.

We believe that passage of this Bill is important. Already a resolution for adoptment has been submitted to the Southern Weed Science Society. It also has the approval of the Weed Science Society of America. In plain terms, we need it. The five billion dollars or more lost to weeds each year is something we must correct. Our future as a dynamic country depends on the limits we place on undesirable plants entering our country and the transportation of these weed bandits through interstate commerce. We urge strong local support through active senator-voter communications.

Certified Manhattan Turf Type PERENNIAL RYEGRASS

Manhattan perennial ryegrass was selected and developed by Dr. C. Reed Funk, Rutgers University. Manhattan develops a uniform dark green, leafy, dense turf with leaf blades finer than most Kentucky bluegrasses. Excellent for hard use areas such as tees, green aprons, cart path flare areas and hard use problem areas. Mowability ratings are excellent.

CERTIFIED MANHATTAN IS GROWN BY THE
MANHATTAN RYEGRASS GROWERS ASSOCIATION
P. O. Box 145 • Hubbard, Ore. 97032

■ Exclusive Marketing ■ Agent
WHITNEY-DICKINSON SEEDS, Inc.
52 Leslie St. • Buffalo, N. Y. • 14240

Manhattan's fine texture is illustrated in this comparison.
Left: FINE LEAF FESCUE
Center: MANHATTAN PERENNIAL RYEGRASS
Right: KENTUCKY BLUE GRASS

Manhattan blends well with other grasses. Here it is combined with Bluegrass.

Manhattan is outstanding for hard use areas. Cartpath flare area reseeded with Manhattan perennial ryegrass.

It's Kid Proof!

For More Details Circle (107) on Reply Card

Synergism, selectivity, and safety

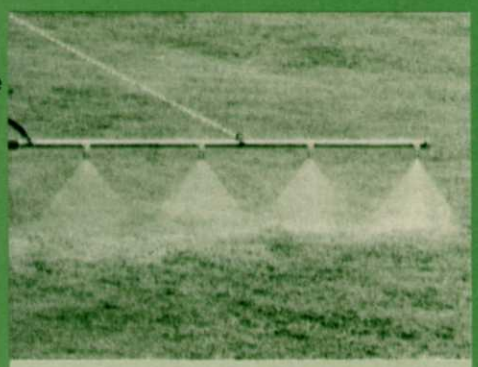
eliminate broadleaf weed problems and your herbicide problems, too.

KILLING WEEDS that other herbicides can't —this is what has made TRIMEC Turf Herbicides a favorite broadleaf weapon among landscape maintenance professionals.

With TRIMEC you get a single solution which kills broadleaf pests resistant to almost all other herbicide treatments. Yet, it provides maximum safety to grasses and ornamentals.

It's the patented synergism of TRIMEC that makes the difference. The effects of its herbicidal components, as combined, are greatly multiplied. But only in the response of broadleaf species—not grasses.

This selectivity factor, coupled with the availability of TRIMEC products tailored to the 2,4-D sensitivity of the grass, makes this broadleaf weapon one that can be used with confidence anywhere.



TRIMEC attacks the whole spectrum of broadleaf weeds

Damage to flowers, shrubs and trees due to root uptake of dicamba are unheard of among TRIMEC users. There's a simple reason.

Because of its extra synergistic wallop, dosages required for effective weed control are too light to cause such injuries.

Why not get on top of your broadleaf problems this year with the TRIMEC formulation best suited to your turf and your convenience. TRIMEC "Fairway" may be used on all commercial turf except St. Augustine grass. TRIMEC "Bentgrass" is recommended for bent, bermuda and other sensitive grasses.

Get TRIMEC and see the beautiful difference it makes in your turf: As broadleaf-free as grass can be.

U.S. Patent 3,284,186

trimec
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Telephone: 913/342-8780

Government News / Business

It's not too late to comment on a proposed standard for toxic pollutants issued by the Environmental Protection Agency. The standard would prohibit the discharge of nine pollutants in toxic amounts into navigable waters, as defined by the Federal Water Pollution Control Act Amendments. They are: aldrin-dieldrin, benzidine, cadmium, endrin, DDT (DDD, DDE), mercury, PCB's and toxaphene. Comments should be directed to: Dr. C. Hugh Thompson, EPA, Div. of Oil and Hazardous Materials, Rm. 1119 East Tower, 401 M Street, S. W., Washington, D. C. 20460.

The 28 days of February are the critical time to businesses subject to inspection by OSHA. Employers are required to post OSHA Form 102, Annual Summary of Occupational Injuries and Illnesses, during this time. It's got to be displayed in workplaces where all employees see it. It would result in a citation if you neglect this part of the law.

More on OSHA....Aluminum-shelled dry chemical fire extinguishers now need to be tested hydrostatically only at 12 year intervals under amended OSHA standards. The ruling was brought about due to a recent change in the standard of the National Fire Protection Association.

The Williams Companies, Tulsa, Okla., has sold the Agrico plant located at Wellington, Ohio to Lakeshore Equipment & Supply Co. The fertilizer plant has the capacity of up to 20,000 tons production annually. Bulk storage is in excess of 2,000 tons.

Vaughan-Jacklin Corporation, through its Jacklin Seed Division Company, has purchased the Plant Food Center, Inc., a major supplier of fertilizers in the Post Falls, Idaho area. The fertilizer company distributes plant food to growers and other commercial users in addition to packaged goods for commercial distributors. Jacklin Seed has been one of its largest customers. Stock in the Idaho company will be traded for shares of Vaughan-Jacklin.

Completion of a quarter-million-dollar modernization program is part of the strategy behind Hahn, Inc. forecast for a 25 percent increase in sales this year. Last year sales rose 28 percent. New equipment now in place will permit the company to step up production. Employment is at a peak 650.

"Do not place in hospital or clinic rooms, such as patient rooms, wards, nurseries, operating and emergency areas." That's what the new label on the No-Pest Strips will be sporting. EPA has determined that certain hospitals across the country have used the strips for flying insect control in patient care areas of hospitals. So Robert L. Baum, deputy assistant administrator for general enforcement at EPA, has notified the American Hospital Association, a 7,000 institution organization, as to their danger. Currently 10 companies manufacture or distribute No-Pest Strips in the U. S.

◀ For More Details On Preceding Page Circle (166) On Reply Card

WINNER
in all categories

0217 brand Fylking Kentucky bluegrass is elite and exceptional in every way, proven in 12 years of international tests. Check and compare these Fylking virtues:

1. Fylking has superior disease-resistance to leaf spot (left), stripe smut (right), stem rust, and leaf rust, as rated by every major university and institution where tested.
2. Fylking's rhizome root system develops so thickly sod can be lifted in 90 DAYS. (see right)
3. Fylking seed tests show 97-99% purity, and 85% germination.
4. Fylking seeds germinate and grow faster. 11-day comparison with another elite bluegrass shown below right.
5. Fylking can be mowed at 3/4 inch (even 1/2 inch) and thrive.
6. Fylking greens up earlier in spring, stays greener in summer heat, remains green longer into fall.
7. Fylking is a superior mixer. With other lawn grasses it greatly improves turf quality and density.
8. Fine texture, short sheath and abundant tillering create luxuriant, deep-green, uniform appearance.

U. S. Plant Patent 2887. Another fine product of Jacklin Seed Company,

For More Details Circle (108) on Reply Card

By **CHET WENDER**
Golf Course Superintendent
The Plainfield Country Club

ALMOST every day a harried business executive, stealing a few hours for a round of golf, remarks to a golf course superintendent how much he envies him in his leisurely, carefree job.

What such businessmen fail to realize is that golf course superintendents must be "big businessmen" themselves to be successful; in fact, they are confronted daily by the toughest competitor there is—Nature.

Few people understand how business-oriented a golf course superintendent must become to be successful. Mowers, aerators and sprinkling systems have the same importance as the business tools of cost accounting systems, long-range planning, reports, supervisory techniques and budget development.

The planning and execution of a golf course maintenance/improvement program is no easy task. It never has been and never will be. In fact, it is becoming even more complex and demanding because inflation is driving costs upward and forcing superintendents to more finely hone their management skills. To cope with inflation I constantly strive to increase my staff's productivity, keep abreast of, and purchase labor-saving equipment, and carefully plan maintenance-saving course improvements. Then I merchandise these items to my greens committee through our annual report.

Obviously, what works for me will not necessarily provide the answer for another superintendent whose climate, course, and greens committee may vary greatly from my own. But my techniques have proven successful at the Plainfield

The Plainfield Country Club traditionally is ranked among the toughest 50 courses in the U.S. Founded in 1890, this rolling 7,018 yard championship course was designed by Donald Ross. A public 9 hole course adjoins the private championship layout.

$20 Thousand In Savings Through Labor Management

Country Club and I believe in them.

Years ago, before costs began skyrocketing, 15 men maintained our 18-hole private championship course and an adjoining 9-hole public layout. Today nine men maintain the course and do an even better job than the 15-member crew did.

What's the secret? There isn't one.

My labor costs per man are up 15 percent because I pay at least 50 cents an hour more than many superintendents in New Jersey. However, by paying the top dollar for a well-trained and willing crew, our productivity has increased and our costs have stabilized in spite of inflation.

Statistics at Plainfield bear me out. Operating expenses to maintain golf courses have risen during the last three years an average of 45 percent nationwide compared to just 17 percent at Plainfield. Increased costs of such items as chemicals have been offset by eliminating 5,000 manhours, by adopting good techniques and by purchasing labor-saving equipment even if the initial cost is higher.

A crew is the first key to success. Although we have cut 5,000 manhours from our operating budget, my men can cope with interferences such as excessive rain or special events previously not scheduled in order to keep the course playable. My small, but efficient crew mows the greens every day before the first golfer tees up and sprays at least monthly, again in the morning before golfers tee up.

By having capable help, I am free to plan our overall program, to maintain detailed cost records, to submit monthly reports and to present an annual report on our stewardship. If our greens committee wants to know what we did on a specific day a year ago and what it cost, we have records to tell them.

An annual report is an excellent tool to plan ways to improve course playing conditions and thus reduce expenses. It also aids a superintendent in recaping accomplishments and in presenting future plans logically to the business-oriented greens committee. They are more apt to approve a written plan than a makeshift short goal presented verbally.

Labor-saving techniques and equipment also help in our campaign to keep the Plainfield course in A-1 condition despite inflationary pressures. For example, we apply spray materials to our greens and tees by pulling a 103-gallon fiber glass tank (with a 15-foot boom) with a Cushman vehicle. The The technique has reduced the task to a simple one-man operation and the costs in labor and time have enabled us to spend more on chemicals.

Fertilization is an important function in our maintenance "game-plan" and our technique is to fertilize every two weeks—depending upon the season and humidity level—to help grass grow uniformly. I'm a great believer in organic fertilizer

(continued on page 26)

Editor's Note: Since 1952 when he became golf superintendent at the Plainfield (N.J.) Country Club, Chet "Red" Wender has risen to the top in his field. In this exclusive story, Wender explains how he keeps the rolling course at Plainfield ranked among the 50 toughest courses in the nation. Perhaps the underlying key to Wender's success is his high standards. As he once remarked, "A superintendent is his own worst enemy. He could cut corners and the average person would never notice the difference. But he just can't! He's got to strive for perfection to live with himself."

Chet Wender, superintendent, examines turf on the 18th green. He's been testing his theories about management and labor savings for 23 years. Adoption of good techniques and equipment has eliminated 5,000 manhours.

Spray crews don't have to work in spray mist all day with the low-diesel application. Accutrol nozzles keep small particles from floating around. Also note the white marking makes for easy visibility (above left). The dead ash (right) was sprayed in 1972 near Charlevoix, Mich. Spray mix was two gallons Banvel 510, one gallon Accutrol, 15 gallons oil and 82 gallons water.

Dormant Brush Control With Less Oil

THERE IS A WAY to get around the fuel oil shortage for dormant spraying.

By substituting an air emulsion spray system and an oil soluble formulation of the herbicide, you can reduce the number of gallons of fuel oil per 100 gallons of mix from 96 to 15.

Here's how it works.

The chemical coordinator of one utility line says it has saved 200,000 gallons of fuel oil and transformer oil by using this system. "Previously, we used 4 gallons of 2,4,5-T and 96 gallons of fuel oil per 100 gallons of mix," he says. "This season, we substituted 2 gallons of Banvel 510, the oil soluble formulation mixed with 2,4,5-T, and 1 gallon of Accutrol for part of the oil. We found we needed only 15 gallons of oil per 100 gallons of mix, with the remainder of the formulation being water. We have worked a special technique to avoid freezing problems."

Explains Chuck Middleton, at Velsicol Chemical Corporation, "The Accutrol air emulsion system allows the 82 gallons of water in the new spray combination to mix with the 15 gallons of oil.

"Also, Accutrol has drift control properties. But more important in low-oil, modified cane work, it helps the chemical penetrate the surface of the bark."

Middleton points out that it's important to spray two-thirds of the stem. The low-oil, modified cane system was first tested in 1969 and used commercially in 1970.

This application has other advantages, though, besides getting around the fuel oil shortage:

1. It's better for the environment. "Reducing the oil content means the grasses aren't burned down as long," says Middleton. "With regular basal work, grasses do not grow back, sometimes for two years or more."

2. The low-oil, modified cane application is safer for the spray crews. "There is a safety factor to consider with the conventional amount of fuel oil," cautions Middleton. "Spray applicators should be warned about smoking around the spray when the temperature gets much above 80°F., and when the humidity is 50 percent or under. Reducing the amount of oil means there is less hazard."

3. The low-diesel, modified cane spray is more comfortable for the crews to use. Large droplets are produced by the Accutrol nozzle," notes Middleton. "Crews don't have to work in the solid mist all day. Even with the low-oil, modified cane application, a spray crew gets some oil on them. But it's not like conventional dormant spray where the men go home and their wives make them change clothes in the garage."

4. The visibility of the Accutrol system lets you see where you have sprayed. "What most utilities like best about this application is the white marking made by the mix," says Middleton. Dormant spraying is perhaps more critical than foliage, in that you have to work harder to get the proper coverage. You have to make sure you get on both sides of the stem, one way or another.

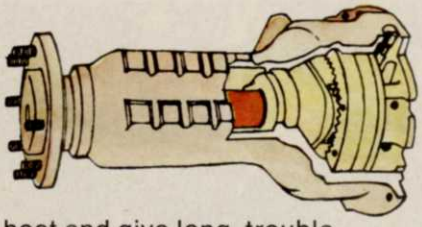
"One problem with regular dormant spraying is knowing when you have the right amount of coverage — usually when the oil begins to run down the stem. You also have to have coverage on the crown and around the base of the tree where the dormant buds ready to sprout are located."

Economically, the low-oil, modified cane application is slightly less costly than conventional spray. But with the added advantage of safety and comfort for the spray crew, less environmental effect, and better spray coverage, many utility companies may decide to stick with the low-oil, modified cane application even if the availability of fuel oil does improve. □

Landscape Special: Ford 3550.

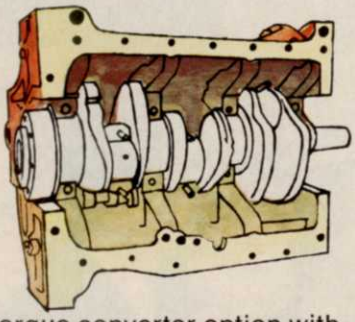
Here's a fresh combination of power and equipment for your loader and landscaping operations. With 56.4 bare engine hp diesel engine . . . ¾ cubic-yard loader . . . and heavy-duty final drive . . . Ford 3550 has everything it takes to step up operations.

Big double-reduction final drive is carried in a husky rear axle housing with 9,000-pound overall capacity. Final drive features inboard planetaries to reduce stress on transmission gears . . . with multiple disc brakes sealed in oil to dissipate



heat and give long, trouble-free service.

56.4-hp diesel features heavy, strong parts in a short, rigid block; famed Ford 3-cylinder design for long life and low maintenance. Add the



torque converter option with power reverser and you've got the engine and transmission combination to step up all operations with loader or 3-point hitch equipment.

Power-assist steering eases maneuvering. Optional diff-lock keeps you moving where others spin out. And heavy-duty front axle with 28,000-pound maximum strength rating resists the stresses of rough going under heavy front-end loads.

Try the 3550, landscape special from Ford. Your Ford tractor and equipment dealer is listed in the Yellow Pages under "Tractor Dealers" or "Contractors' Equipment & Supplies". See him for information on how to buy, lease, rent or finance.

ROPS, front wheel weights, and hitch-mounted equipment is optional at extra cost.

NUMBER ONE ON WHEELS AND GROWING

FORD TRACTOR

Ford

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Green Grows The Business In Ohio

OFFICIAL figures have revealed a total registration of 1102 persons at the most successful Ohio Turfgrass Conference and Show in Cincinnati, Ohio. Of the total attending 823 were from Ohio, 269 from 23 states, 3 from Belgium and 7 from Canada. Golf course superintendents, sod growers, turfgrass managers, and industry representatives in attendance attended eight educational sessions and reviewed products and equipment in over 100 exhibits.

Paul Mechling, program committee chairman, was responsible for compiling the educational program. The first session consisted of research reports by several University personnel.

Dr. Gilbert, of North Carolina State University, presented a summary of turf conditions and research in North Carolina. Dr. Harry Niemczyk, Ohio Agricultural Research and Development Council (OARDC), followed with a presentation on insect problems in Ohio. He emphasized the current status of research work relating to the control of chlordane resistant grubs in Ohio. Dr. Richard Riedel, Ohio State University, followed with an address on the effects of nematodes on turfgrass areas in Ohio. Dr. Merle Niehaus and Dr. Dave Martin reviewed the turfgrass research projects at Wooster and Columbus.

The first session was concluded with an address on "The Energy Crisis — Its Problems and Solutions" by Dr. Roy M. Kottman, dean, college of agriculture and home economics, Ohio State University. Dean Kottman reviewed the current energy problems and shortages, and spent considerable time on the possibilities of new fuel sources and the need for

(continued on page 21)

Ohio Turfgrass Foundation

The latest in turf equipment (upper left) was on display for this year's show. Take it easy with E-Z Go, says the manufacturer (upper right). Here's a good example. OTF scholarships (middle left) went to Joe Renner, Clark Technical College (1) and Dick Kress, Agricultural Technical Institute (r). Lou Greco (c) was scholarship chairman. The Toro Greenmaster (middle right) represents the latest in greens mowing. GCSAA scholarships (middle) went to Ohio State University students Robert Cochran (1) and Mike O'Connell (r). John Spodnik (c) makes the presentation. Another scholarship winner was Scott Cook. New OTF president, Ron Smith (extreme lower left) of Bowling Green Univ. presents OTF Presidents Plaque to outgoing president Paul Morgan, Browns Run Country Club. Educational sessions were well attended as witnessed by this attentive crowd (below).

It earned its fame by giving sand traps a whole new look.

Now the Sand Pro turns all-pro as a spiker and finish-grader, too.

SPIKES GREENS

GRADES SEEDBEDS

Now look at what the Sand Pro can do for you! It can dress up your entire course with distinctive, uniformly beautiful traps that consistently play as well as they look. It can do a better job of spiking your greens than any specialty spiker on the market (and we'd like to prove it on your own greens). It can take the drag out of pulling a drag-mat over the greens. And, with the new Finish-Grader it can handle fine grading, scarifying, shaping and contouring of seedbeds. All this in a highly maneuverable, low maintenance unit with hydrostatic drive to all three extra-low-pressure tires. It's another classic from Toro—backed by the Toro parts and service system. Look over the features and benefits, in detail, on the next page.

TORO® | SAND PRO®

TORO® SAND PRO®

Any way you put it together, you can't beat the features and benefits of the Sand Pro!

PRIME MOVER

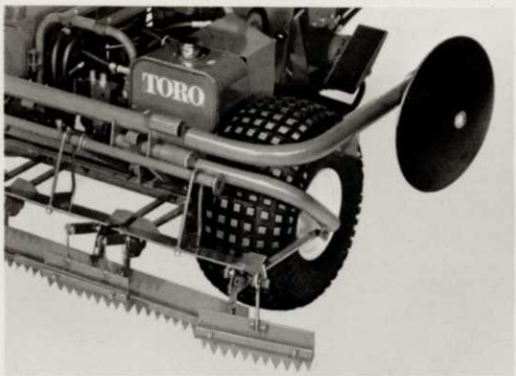
Heavy-duty industrial quality hydrostatic drive to all three wheels gives excellent torque with no gears to change, no clutch to slip. Single foot pedal gives infinitely variable ground-speed control — as well as forward to reverse in one smooth, continuous motion. Short-wheelbase tricycle design, low center of gravity and midship-mounted engine combine to give machine maximum maneuverability, stability and traction. Special ATV tires carry only 4 psi for excellent traction in sand, good flotation on greens. Automotive-type steering to front wheel turns machine on zero radius to left or right for superior handling ease. Simplified operator control area reduces learning time and operator fatigue, increases safety.

SPECIFICATIONS*

FRAME: All welded tubular-steel construction.
WHEELS: Standard demountable — interchangeable for three positions. 21 x 11:00-8 tires. Extra low-pressure, 4 psi compass tread.
ENGINE: Kohler 8 hp Model 181 SP. Cast iron block, dry element air filter, fuel pump. Rubber mounted.
STARTER: 12 v. Bendix-drive electric starter is standard. Key switch controlled from dash.
DRIVE: 3-wheel hydraulic. Engine-mounted variable-displacement piston pump through flexible coupling to 3 Ross Torqmotors® on wheels.
STEERING: Automotive-type steering wheel. 6:1 reduction ratio.
SEAT: One piece molded with back support. Adjustable forward and back.
OPERATOR CONTROLS: Key start, hand throttle, hand choke, ammeter and hour meter on dashboard. Foot pedal controls forward/reverse and speed. Hand-operated hydraulic control lifts and lowers rake, spiker or grader. Valve disengages pump for towing or pushing.
FUEL TANK: 2.7 gallons.
HYDRAULIC RESERVOIR: 1½ gal.
HYDRAULIC OIL FILTER SYSTEM: 10 micron replaceable element.
SPEED RANGE: Infinitely variable to 5½ m.p.h. maximum.
TURNING RADIUS: Machine turns on zero radius to the left or right.
REFUSE CONTAINER: Removable and located within easy reach of operator.
DIMENSIONS: Width — 58½". Overall length — 62½". Wheel base — 40". Height — 42". Weight — approx. 650 lbs. with fluids.

SAND RAKE (with Prime Mover)

Four independent cultivator bars and nine free-floating finish rake sections hug banks and contours to give continuous coverage over entire trap surface. Adjustable weights on free-floating rake sections for best finished appearance under various sand conditions. Hydraulically raised and lowered rake and cultivator bar can be held at proper depth of penetration for best mechanical cultivation, weeding and finish combing — eliminating chance of green damage by herbicides. Wide 68-inch rake combined with exceptional maneuverability of prime mover reduces trap maintenance time to less than half that of hand raking an average trap. Optional maintenance edger (model No. 08822) is a hydraulically raised and lowered coulter blade that trims vegetation around edge of trap, leaves a clean, tailored appearance and eliminates slow hand maintenance.



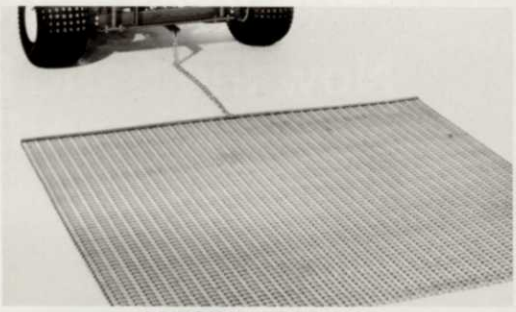
OPTIONAL MAINTENANCE EDGER

SPECIFICATIONS*

Model No. 08875
Hydraulically raised and lowered. Four forward conditioning sections utilizing subsurface bar for breaking crust. Nine finishing sections. Angle of conditioning bar adjustable for depth of penetration. Finishing sections have adjustable weights. Width: 68".

SPIKER

Special Toro profile-tooth blade spikes cleanly without ruffling turf (hold-down fingers prevent lifting turf, too, so greens are immediately playable after spiking — no rolling or cutting needed). Extra large tires provide flotation equal to the Greensmaster® 3, and the transfer spring puts up to 22 lbs. per blade across the 58 inch spiking reel width for maximum 1¼ inch penetration. 3-point hitch makes spiker simple and quick to attach and detach. Optional drag mat (model No. 08844) and hitch kit (model No. 08833) turns incorporation of top dressing into an easy job, and crushes and crumbles aerifier cores.



OPTIONAL DRAG MAT

SPECIFICATIONS*

Model No. 08855 without hydraulic cylinder.
Model No. 08866 with hydraulic cylinder.
WEIGHT: 280 lbs.
UNIT WORKING WIDTH: 58".
WORKING DEPTH OF SPIKER: 1¼" maximum.
SPACING OF BLADES: 2⅜".
NUMBER OF SPIKE HOLES: 21 holes per square foot.
SPIKER BLADES: High carbon steel — .105 inch thick. Special profile design for minimum disturbance of soil surface when spiking. 8 points per blade, 24 blades. 7¾" dia. blade point to point.
POWER: Ground driven.

FINISH-GRADER

Spring-loaded Finish-Grader has closed ends to prevent windrows, is automatically self-relieving across entire width of scraper as machine travels forward to leave a smooth, even surface. Hydraulically controlled up and down for ease of operation and control of grading and scarifying depth. Heavy-duty steel teeth can be dropped out of transport position for soil conditioning and scarifying loosened soil. Hi-flotation tires and balanced weight distribution of Prime Mover means less compaction than with a heavy tractor when fine grading, shaping and contouring seedbeds. Rugged construction, simple design means long life, low maintenance.

SPECIFICATIONS*

WEIGHT: 200 lbs.
DIMENSIONS: Length: 10 inches. Width: 66 inches. Height: 10 inches.
LIFT: Hydraulic.
DESCRIPTION: The Sand Pro Finish-Grader accessory consists of a box plow and scarifier designed to quick mount to the Sand Pro. The unit is capable of light ground maintenance and grooming, replacing hand shoveling and raking on ball diamonds, on golf courses, and for landscaping in small areas where use of larger machinery is not feasible.

*Specifications and design subject to change without notice. The Toro Company, Bloomington, Minnesota. Printed in U.S.A.

Walter Wagner, Lancaster Country Club, received the OTF Man-of-the-Year Award. He was cited for his outstanding contributions to the turfgrass industry. He and Mrs. Wagner were presented a commerative plaque.

GREEN GROWS

(from page 18)

this country to develop these alternate energy resources.

The following day attendees chose between three sessions: Industrial and Commercial Grounds, Golf Courses, or Schools and Athletic Grounds. Roger Thomas, Jacobsen Manufacturing Company, gave an address on thinking ahead and adequate planning to get the job done easier. A discussion on mowing was given by Dale Atkinson of Toro Manufacturing Company. He reported on proper mowing techniques, use and misuse of equipment, and proper maintenance of mowers for longer use.

The most recent information on *Fusarium* blight was presented by Dr. Joe Vargas, Michigan State University. He explained the *Fusarium* — nematode interaction and the resulting turf injury. Several fungicides and nematocides are controlling *Fusarium* but they have to be watered into the turf root zone.

Walter Wilkie of March Irrigation and Supply Co. reviewed the metric system at the afternoon session. He explained why United States industry is suffering because it hasn't gone with the metric and the effects on golf courses and turf areas. He urged that we recognize the need and begin the switch to the metric system as soon as feasible.

Another highlight of the session was the awarding of student scholar-

(continued on page 28)

Professional Excellence Awards were presented to five turfgrass leaders. They are (1-r) Sil Monday, Outdoor Recreation Association; Hartl Lucks, Chem-Lawn Corp.; Woodrow Wilson, Eastside Nurseries. Not pictured but award winners are: Dr. Joe Polivka, professor emeritus, OARDC; and Dr. Robert Schery, The Lawn Institute.

turf professionals KNOW WHAT THEY WANT in grass seed performance!...

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Adelphi KENTUCKY BLUEGRASS

GIVES THEM WHAT THEY WANT! *

MAN-CONTROLLED BREEDING GIVES IT DARKER GREEN COLOR AND TOP RATINGS FOR OVERALL PERFORMANCE

Adelphi KENTUCKY BLUEGRASS

(U.S. Plant Patent No. 3150)

Developed at Rutgers University in the most advanced bluegrass breeding program ever undertaken... **IT'S A FIRST IN TURF!**

10 YEARS OF MAN-CONTROLLED PARENTAGE BREEDING and 7 YEARS OF TESTING have given ADELPHI the features most wanted in turf... Good looks with a richer darker color which it maintains throughout the entire growing season, good disease resistance, excellent density due to good rhizome and tiller development and tolerance to moderately close mowing.

* *FIND OUT FOR YOURSELF what TURF PROFESSIONALS who have tried ADELPHI, have to say about its performance record! AN INFORMATIVE FREE BOOKLET IS YOURS FOR THE ASKING thru:*

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For More Details On Preceding Page Circle (125) On Reply Card

For More Details Circle (144) on Reply Card

Service To Industry

During the National Arborist Association executive meeting in 1968, Paul S. Walgren of the Walgren Tree Experts, West Hartford, Conn. made the statement that the tree industry needed a measuring stick for employees. The man in the field needed knowledge of the trade in order to progress from laborer to a position where the employer and customer had confidence that they were receiving qualified workmenship.

Bill Lanphear of Forest City Tree Protection Company, Cleveland, Ohio suggested a Home Study Program be developed. Much discussion followed and the executive secretary of NAA was instructed to research the possibilities and means of developing a program.

In June 1969 a proposal was submitted to the executive members and accepted based on the approval of the NAA membership. The executive secretary then promoted the program by traveling to six locations throughout the U. S.

After some frustrating delays Ed Irish, Charles F. Irish Company, Detroit, Mich. and Bill Lanphear started working on the program. They are responsible for the successful writing of the course's 16 lessons.

The course has been offered to the tree industry for approximately two years. The following are comments from recent graduates of the course. They are presented as testimony of an industry group seeking to gain knowledge through its members.

Ed Irish (l) and Bill Lanphear

"Growing environmental concern has produced a demand for better trained people in many phases of industrial development," says Dennis M. Luczewski (r) of the Public Service Co. of New Hampshire. "The Professional Home Study Program for arborists is a big step forward in attaining levels of greater efficiency and increased productivity. My primary function with PSCO as technical assistant, is right-of-way maintenance. Paramount among these functions are initial line clearing, side trimming, selective clearing, roadside beautification and brush control."

Elden Poletti has been an employee of Griffin Tree & Landscape Co., Santa Barbara, Calif. for nearly 25 years. "Having learned something of the anatomy of a tree, how the various parts function, and its relationship and dependence on the soil which supports it," he says, "I can now visualize what reaction can be expected by the treatment I may perform. Although it is not difficult for me to realize when a tree is in trouble, I now know the areas in which to look for specific symptoms such as foliage, trunk and roots. By taking this course I am better prepared to discuss and explain to the owner what I propose to accomplish in a particular tree. This, I feel, benefits me, my employer and the client."

"As office manager and secretary of our company, it has been my responsibility to answer questions on the planting and general care of trees and shrubs when the men are not in the office," says Mrs. Doris Haddock, Haddock's Landscape & Tree Service Ltd., Galgary, Alberta, Canada. "Before taking the NAA Home Study Program, I knew the HOW of tree planting and the general care of same, but now I know the WHY. I can, therefore answer questions with much more confidence."

"A person does not realize how little he really knows until after taking a course like NAA's Home Study Program," reports Jim Boling, park supervisor, Medford, Ore. "The course has been especially helpful to me when it comes to correctly diagnosing a particular tree problem. I highly recommend the course to anyone wishing to know more about trees."

"I was familiar with the material but there was a lot of little things that really came out," comments Paul Leimeister, Larry Holkenborg Nursery, Inc., Sandusky, Ohio. "The pollution part was the most fascinating. I learned how soil fills affect trees, the preventive and corrective measures to take when the problem is encountered."

"Tree identification is an important part of my work," says Carmen Di Mardo, Monroe Tree & Landscape, Inc., Rochester, N. Y. "I found that the professional course for arborists was a great help in identification as well as in diagnosing tree diseases. The chapter dealing with spraying techniques was particularly interesting."

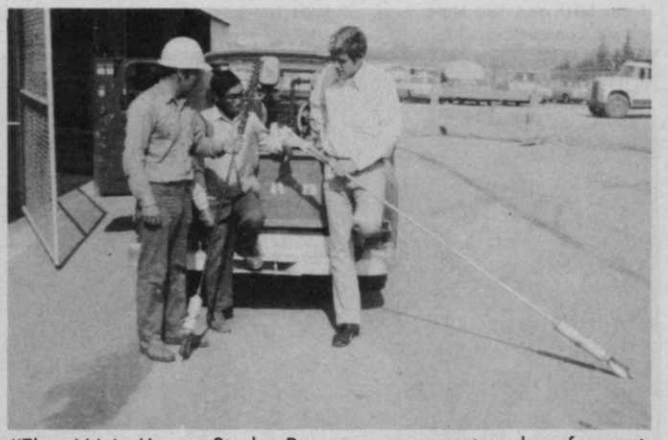
"The NAA Home Study Program is the best course on arboriculture that "I've ever taken in the 17 years I have been employed in plant care work," says Willie Ward (l) a heavy equipment operator at General Electric's Appliance Park — East Columbia, Md. "It is a 'Power-Packed, Fact-Filled' course."

"This course really puts the business of being an arborist in an entirety," says Robert R. Lenz, Parkway Tree Surgeons, Henrietta, N. Y. "It taught me details that would take years in the field to learn but had the advantage over college because I was able to apply what I learned while continuing to learn." Reports Richard R. Lenz: "This program should become as important to the tree man as his rope and saddle. It is a good investment both for learning and a continuing reference over the years. We feel that this is the only writings that really explain tree work in a way that can be applied commercially and at the same time is condensed where there is no wasted time in learning."

"The value of the knowledge received far exceeds the cost of the courses," says Joe Teixeira, (r) City of Walnut Creek, Calif. "I am pleased that my city and superiors had the farsightedness to realize the course value as a training aid and chose me to take it. It appears that the National Association put a great deal of thought into the course material and kept it interesting as well as easy to study. It is clearly written, concise and to the point.

"Now that I have completed all 16 lessons in the course, I can evaluate just what benefits it had to offer," says Bruce Egan, Hudson Tree Service, Belleville, Ill. "I had some previous knowledge of how to care for trees. But I really didn't know just why I was doing certain things.

John P. Stephens was hired by the city of Lynchbutg, Ba. in 1972 to fill the position of horticulturist. The position included the supervision of the forestry division, reports Floyd K. McKenna, director, department of parks and beautification. His background was in ornamental horticulture. He felt he needed further study of shade trees and their related insect and disease problems. He enrolled in the NAA Home Study Program. The information proved so beneficial that he enrolled in the advance course. The knowledge Stephens gained from this study is used daily in diagnosing tree problems, supervising pruning and surgery, safety, equipment use and selection of trees for replacement.



"The NAA Home Study Program was not only of great benefit to me, but to my employer, and to new employees just starting out in arboriculture," remarks Donald R. West, street tree operations, Santa Barbara County, Calif. "Beneficial parts were sections relating to the diagnosis of tree and insect problems.

Green Industry Newsmakers

PEOPLE PLACES EVENTS

These six men led a workshop on yellow nutsedge at the recent Northeast Weed Science Society. They are: (1-r) Dr. Robert D. Sweet, Cornell University; Dr. John Meade, Rutgers University; Dr. L. L. Jansen, USDA; R. R. Libby, Stauffer Chemical Company; J. E. Gallagher, Amchem Products Company; and Dr. G. H. Bayer, Agway.

New officer roster for the Northeast Weed Science Society. The 1974 slate includes (1-r) Dr. H.P. Wilson, Virginia Truck & Ornamentals Research Station, Painter, Va., vice pres.; Dr. Walter Gentner, USDA Beltsville, Md., pres.; and Dr. James Parochetti, Univ. of Maryland, College Park, Md., secretary-treasurer.

Superior design, materials and execution toward improvement of man's environment are the criteria for awards given at the Denver Technological Center. Those receiving awards were: (1-r) John Cable, A Keeson & Sons., Inc.; Carl A. Worthington, Carl A. Worthington Associates; Bob Woodman, Woodman Bros. Landscape & Nursery Inc., Jim Del Ponte, Del Ponte Landscape Company; George M. Wallace, board chairman, Denver Technological Center.

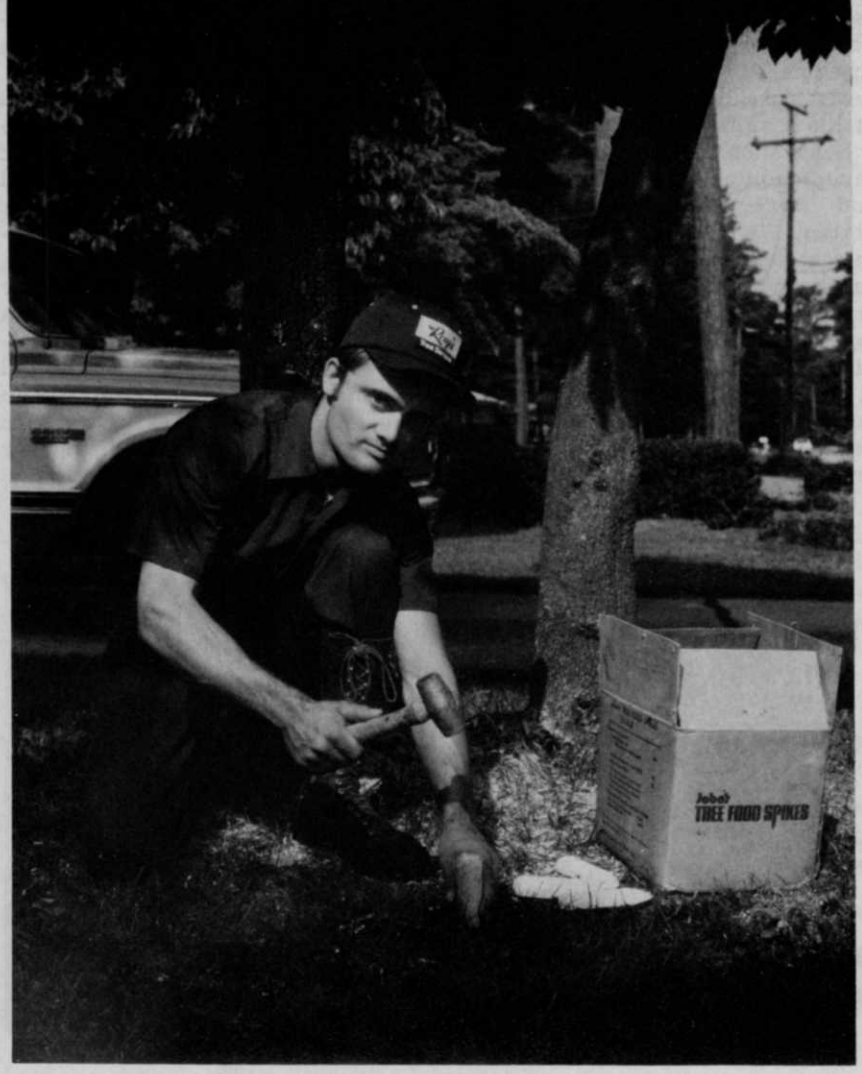
Mississippi State University welcomes the Associated Landscape Contractors of America to the campus. Jerry Lankenau (1) president and Bill Byers (r) chairman of the education committee of ALCA represent the association. MSU delegates are Robert Callaway (second from left) and Lee Nutt, pres. of MSU Landscape Contracting Club.

Dr. Otis Curtis, N.Y. State Agricultural Expt. Station (r) receives the award for the best research paper at the Northeast Weed Science Society meeting. Dr. Ralph Hansen (1) presents the award. Dr. Arthur Bing of Cornell (center) was chairman of the awards committee.

Associated Landscape Contractors of Mass. have elected new officers. They are: (1-r) Dan Peligrino, J&D Landscape Contractors, Inc., assistant sec.-treas.; Charles A. Laughton, Laughton's Garden Center, sec.-treas.; Fred Heyliger, Farm Bureau Assoc., president; Normal F. Brisson, N.F. Brisson, Inc., vice president; and Daniel Leone, A. Capizzi & Co., Inc., past president.

"If you make your living taking care of trees, Jobe's Tree Food Spikes save you time and help your profit."

–Ray Kalwara
Ray's Tree Service
Virginia Beach, Va.



"Increment borings have proven to me that you get significant growth with **Jobe's Tree Food Spikes.** And they're a lot faster than using a drill. My men like them, my customers like them. I like the time they save and the extra money they make for me."

Jobe's® Tree Food Spikes are quicker, easier and more profitable than drilling. Here's proof on a 5" tree:

Drilling Method[1]

Bulk 16-8-8 fertilizer—$90/ton *(Example price throughout U.S.)*	
2 lbs./in. of trunk diameter =10 lbs. x 4.5¢/lb.	$ .45
½ hr. labor @ $4/hr.	2.00
Labor and materials	$2.45

$2.45 ÷ 5" tree = 49¢/in. of diameter

No allowance made for depreciation, amortization, breakage of auger, mistakes, etc.

[1] *Using electric auger*

Jobe's Tree Food Spikes Method[2]

5 spikes 16-8-8 fertilizer—22¢/spike	
1 spike/in. of trunk diameter	$1.10
5 min. labor @ $4/hr.	.33
Labor and materials	$1.43

$1.43 ÷ 5" tree = 29¢/in. of diameter, based on 20 case order.

[2] *Based on results of university field tests and recommendations.*

Give **Jobe's Tree Food Spikes** a try. Contact your local supplier or write direct.

Jobe's®
TREE FOOD SPIKES
MAKES TREE FEEDING EASIER
462 East High St., Lexington, Ky. 40508

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$20 THOUSAND IN SAVINGS

(from page 15)

and do not limit myself to any one type.

On greens and trees we use natural and/or synthetic organic fertilizers such as Milorganite and Witroform ureaform at a rate of no more than one-half pound of N per application. A straight mixture of milorganite is applied on fairways and supplemented with a second application containing one-half pound of Blue Chip ureaform per 1,000 square feet. We fertilize with organic fertilizer May through September.

The second application is put down in the fall. Because of our New Jersey climate, we put the first fertilizer application down in late May or June and we never fertilize when it is hot and humid.

My man makes two passes over the greens and trees and applies half the fertilizer in one direction and the rest at right angles to the first pass using an electric cyclone spreader pulled by a Cushman vehicle. This process has reduced the manpower requirement from two men to one.

Although it is common practice on other courses, we do not syringe our greens. In my opinion, syringing is harmful because it cooks the grass. We start watering fairways at 8 p.m. We have an all-electric automatic sprinkler system with heads that are turned on automatically for 15-minute periods to completely water greens, fairways and tees by 5:30 a.m. every morning. Anything more than 15-minutes is wasteful at Plainfield because that is all the soil can absorb at once.

My philosophy of growing good turf is to throw everything but the kitchen sink at our greens, tees and fairways. Our use of fertilizer applications on fairways, two or three pounds of actual N per 1,000 square feet annually, should be applied after the turf is dry. We apply fertilizer on an off day, generally Monday—especially in the fall—when using the 15-0-15 application. Otherwise, burning will be readily noticeable if golf car and foot traffic is heavy.

Our disease control program is preventive so our chemical costs and manhour expenses exceed those at courses where superintendents try to save dollars with curative programs. A curative program, in my opinion, is being penny wise and pound foolish. Inflation or otherwise, it is better to spend a few extra dollars in spraying than to risk losing greens to disease and being forced to undergo an expensive renovation program.

We spray greens and tees every week from mid-May through October, depending upon the weather, and also fairways every 21 days from June through August. We use one-half ounce of Clearys 3336 and three ounces of Thiram per 1,000 square feet. In addition, twice a year we spray fairways with a combination fungicide and insecticide. A regular spraying schedule is as important as a regular fertilization schedule, and I can honestly say I've never had a disease control problem at the Plainfield Country Club.

Renovation is expensive, so labor saving equipment, good personnel and proper techniques are important. We top dress our greens and tees at least twice, and up to four times yearly. Although top dressing is expensive, it provides excellent long-range results in maintaining high quality putting green surfaces. It discourages thatch build-up and encourages new, vigorous growth, better strains of grasses, upright growth, and less grain and disease. The combination of water, fertilizer and air penetration minimizes the effects of heavy play and abuse.

We aerate our greens with a Ryan Greensaire with ⅜-inch tines set 2½ to 3 inches deep. We go over the green in the same direction with a belt-driven vertical mower with blades set flush on a concrete pad so cores can be broken. We then drag the greens in several directions with a steel matt to further break cores and work them into the soil.

Next we blow off our greens to clean off excessive cores after using the vertical mower. Lastly, we mow the greens. If the greens are top dressed, we wait at least one week before resuming our fertilization program.

In order to maintain quality fairway turf, a thatching program should be implemented on an annual basis. We thatch in September or early fall—never in spring—because of our variable weather. If the weather goes against us, we'd never get the fairways to heal.

Opening up turf and soil permits better use of materials, penetration of air and water, and a deeper root system. Thatching has always been important and is doubly so today because of increased maintenance costs.

We never thatch our greens and we never thatch below 1 to 1½ inches on fairways. I think only one in fifty golf courses has an ideal thatch level. I believe you'll never have problems unless thatch exceeds an inch in depth. Incidently, we break up thatch material by pulling a heavy-duty, tractor-drawn steel mat in several directions, followed by mowing to "chew" it and let the pulverized material lay on the fairways. It serves as a mulch and within a week, with regular

(continued on page 70)

STH74-11 A

Lawn King bags it!

NITROFORM*
organic nitrogen

The easy-handling, slow-release nitrogen that gives uniform coverage in any type spreader.

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HERCULES INCORPORATED

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STH74-13 A

Lebanon bags it!

NITROFORM*
organic nitrogen

The slow-release nitrogen that feeds and feeds. Try it for steady uniform growth.

Turf and Horticultural Products, Synthetics Dept.
Wilmington, Delaware 19899

HERCULES INCORPORATED

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Six New BANVEL® Pre-Mix Combination Added To The BANVEL® Herbicide Line.

Banvel pre-mix combinations containing 2,4-D and 2,4,5-T are available in either oil or water soluble formations, lets you eliminate *selectively* tough brush, vines and broadleaf weeds that other herbicides often miss.

With this choice, the herbicide can be matched to type of vegetation, season, location, soil type, topography, environment, and other considerations. See your Velsicol representative or herbicide applicator for details.

Why Banvel is the 3 E's Herbicide

EFFICACY—BANVEL herbicide is systemic—it translocates throughout the entire plant killing leaves, stems and roots. Broad-spectrum BANVEL gets the hard-to-kill vegetation.

ECONOMY—Long-lasting BANVEL herbicide offers low cost. Often one application per season is all that is required for weed and vine control. Brush can be controlled for several growing seasons, with a 3- to 5-year root kill.

ECOLOGY—BANVEL has relatively short persistence in the soil. It has established tolerances for many food crops and milk. BANVEL is not harmful to animals eating foliage.

For information, fill in blanks below.

I am interested in controlling _____ on _____
(vegetation) (place)

Please send sample labels and information to:

Name _____

Title _____

Company _____

Street or Box _____

City _____ State _____ Zip _____

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A Subsidiary of Northwest Industries, Inc.

Velsicol Chemical Corporation
341 East Ohio Street
Chicago, Illinois 60611

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Send for Stanley's 1974 Hydraulic Tool Catalog

Virtually an encyclopedia of hydraulic hand tools. All made by Stanley, toolmaker for the world. Belongs in the library of any company or individual working in construction, utilities, industry, tree trimming, government, agriculture, or underwater.

Shows and describes Stanley hydraulic tool line and gives specifications, performance data and advantages.

Includes all the newly developed hydraulic tools with special emphasis on features and applications.

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Division of The Stanley Works
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Fill in name and address and mail to Stanley Hydraulic Tools for your free copy of this informative catalog.

Name_____

Firm_____

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City_____ County_____

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Six students at Ohio State University received scholarships from the Ohio Turfgrass Foundation. They are: (1-r) Dr. Dave Martin, OSU turf advisor, Bill Job, Bill Huelsman, Rick Kucharski, Paul Revoldt, Bob Cochran and John Moser. Lou Greco, OTF scholarship chairman made the presentation.

GREEN GROWS

(from page 21)

ships. Ohio Turfgrass Foundation scholarships were presented to Ohio State University students William Job, Robert Cochran, Paul Revoldt, John Moser, Rich Kucharski and William Huelsman. Students from Clark Technical College receiving OTF scholarships were Joe Renner, Dave Pollock, and Craig Schoenberger. Richard Kress also received a scholarship. He is a student at the Agricultural Technical Institute of The Ohio State University, Wooster, Ohio.

John Spodnik, past president, Golf Course Superintendents Association of America, presented GCSAA scholarships to Ohio State University student's Michael O'Connell, Robert Cochran, and Scott Cook.

The annual banquet was preceeded by a reception given by Lakeshore Equipment and Supply Company, Cleveland. Ohio Turfgrass Foundation Professional Excellence Awards were presented to Robert Schery, Better Lawn Institute, Marysville, Ohio; Dr. Joseph Polivka, professor emeritus, OARDC, Wooster, Ohio; Woodrow Wilson, Eastside Nurseries, Canal Winchester, Ohio; Hartl Lucks, Chem-Lawn Corp., Dublin, Ohio; and Sil Monday, Outdoor Recreation Association, Cleveland, Ohio.

Newly elected OTF President Ron Smith then recognized Dr. Robert Miller for his outstanding contribution in serving as Executive Secretary of the Ohio Turfgrass Foundation since its infancy. He was given the singular honor of a life-time membership in the Ohio Turfgrass Foundation.

The highlight of the evenings awards was the honoring of the OTF Man of the Year for 1973. He is Walter Wagner, superintendent, Lancaster Country Club, Lancaster, Ohio. He has been active for many years in the Golf Course Superintendents Association of America and is recognized as the dean of golf course superintendents in central Ohio.

New Officers of the Ohio Turfgrass Foundation for 1974 are: Ron Smith, Bowling Green State University, president; Paul Mechling, Sylvania Country Club, Sylvania, Ohio, first vice president; James Seigfreid, Losantiville Country Club, Cincinnati, Ohio, second vice president; and Glenn Hudson, Walnut Hills Country Club, Columbus, Ohio, treasurer. Paul Morgan, Browns Run Country Club, Middletown, Ohio, is past president.

Trustees are: John Fitzgerald, Century Toro Distributors; John Laake, Crest Hills Country Club; Lou Greco, Squaw Creek Country Club; Don Collins, Upper Landsdowne Golf Links; Bill Eble, Ohio Toro; Fred Buscher, area horticulture extension agent, Ohio Cooperative Extension Service; Art Edwards, publisher, WEEDS TREES AND TURF; Ron Giffen, Lakeshore Equipment and Supply Company and Mac Gilley, Findlay Country Club.

The concluding educational sessions were designed for builders and contractors, golf course superintendents, and landscape contractors. Dr. William Daniel of Purdue University presented an up-to-date report on the Purr-Wick greens system. There also were talks on fertilization, irrigation, and golf greens construction.

The 1974 Conference and Show of the Ohio Turfgrass Foundation will be held in Columbus, Ohio, December 3-5, 1974.□

Vibratory plow module on R65 vehicle.

VP12 self-contained vibratory plow.

Make underground installations *WITHOUT* destroying your turf.

Digging ditches across expensively-landscaped lawns or golf courses can be bad business. Who wants to tear up the turf to make underground installations?

Ditch Witch has the answer. In many cases you don't have to trench — you can go underground without it with a Ditch Witch vibratory plow. Turf damage is kept to an absolute minimum; most of the time-consuming and costly restoration is eliminated. You can bury telephone and electric cable, gas and water lines quickly and easily without trenching. You can install a complete underground sprinkler system on a golf course without having to close the course!

Ditch Witch makes vibratory plow modules for all its Modular-matic vehicles. Or, there's the versatile 25-HP VP12, a self-contained vibratory plow package.

If your job calls for main distribution lines, the same Modular-matic vehicle can handle that job, too — just replace the vibratory plow module with a digging module and you're ready to go.

Or, switch from trenching to plowing and back again instantly with a Ditch Witch Combo module, a vibratory plow and offset trenching assembly.

And you can outfit your basic vehicle for other jobs, too. Ditch Witch offers a versatile utility backhoe, a hydraulic boring unit and other money-saving attachments.

When your job calls for underground installation, and it's important to keep turf damage to a minimum, look to Ditch Witch — the leader in the underground equipment field.

DITCH WITCH®

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A full line of equipment from 7-HP to 195-HP

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The Big Red Line
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The World's First Completely Automatic Sprig Planters And Harvesters
All One-Man Operation

New "Fairway Special" SPRIG PLANTER
With 2" Row Spacing

Designed Especially for Golf Course Fairway Planting

The Fairway Special lays down a carpet of Bermuda sprigs, up to 100 bu. per acre. 36 large planter wheels insert sprigs to desired depth on 2" row spacing. In 2-4-6-8 and 10-ft. widths.

New 4-Row Sprig Planter on 3-Row Frame

20" Row spacing. Double sprigs in one operation. Quick coverage. Assures a thick stand in closely spaced rows. New features make the King the best sprigger for Bermuda, Alisa, Zimmerly, Coast Cross, Pangola and other top-growth root planting.

The Big Red Line of Harvesters

New 42" Sprig Harvester with Elevator

6 Models to Choose From: 42", 28", 20"

Designed especially for Custom operators. Digs, loads and cuts to planting length 1000-1200 bu. of clean sprigs per hr. . . up to 2000 bu. when equipped with Side-Loading Elevator.

New 20" Sprig Harvester

The popular new 20" Sprig Harvester digs and loads 400 to 500 bu. of clean sprigs per hr. Up to 600-900 bu. with side loading elevator. Floating PTO Shaft and Shear-Pin protection. Heavy-duty construction.

Inquire Now for Delivery This Season
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LETTERS TO THE EDITOR

WAY TO GO

You did a terrific job with the Texas Industrial Weed Control Conference. In fact, your report is so detailed that we might just lift it and print it as the proceedings for the Conference.

We were honored by your coming to our Conference. We are deeply indebted to you for this fine national coverage you have given us. **Wayne G. McCully, resident director, Research and Extension Center At Chillicothe-Vernon, Tex.**

LONG REMEMBERED

Thank you for your immediate and complimentary obituary regarding the death of my husband, Felix V. Juska. I do not believe I have ever seen such a clear photograph as in your publication.

Felix would have been so pleased to know that such a well respected publication as yours carried a story about him in the November, 1973 issue when he had died only on October 25, 1973. Such a fact makes me feel most appreciative, humble and proud!

WEEDS TREES and TURF was one publication Felix was most anxious to receive following his retirement so that he could continue to keep up to date with the latest developments. Sir, that is a compliment to your company!

When Felix started work for his Doctorate, he was asked why he selected turfgrass as his study — his reply was typically frank and simple that he didn't know anything about it and thought it might be interesting. Indeed, it was to become a most interesting field of study and for eighteen very busy, happy years, turfgrass was our "bread-and-butter" and led us to so many happy, helpful, cooperative friends.

"Turfgrass Authority" — the label you gave him is indeed one of the highest honors you could have bestowed on my husband. On Felix's behalf, I would like to express our sincere appreciation for meaningful words of respect. However, let us acknowledge that, no one person can become an "authority" without the help of fellow workers — so to you, and to the many others who have cooperated in so many ways to help Felix in his achievements — and, yes, for the many laughs and good times shared, I am most grateful.

Thank you for the respect and honor you have shown Felix, and for being such a good friend. **Mrs. Felix V. Juska, 10309 Parkman Road, Silver Spring, Maryland.**

Three Point Program Helps Increase Battery Life

A three point program for longer battery life consisting of knowledgable purchasing, proper mounting and systematic service checks was outlined by Robert Buesing, product manager, Microporous Products Division, Amerace Corp. in a recent interview.

A basic knowledge of the construction and component parts of a battery can be extremely helpful in making an intelligent purchase, Mr. Buesing stated. For example, rubber separators are widely used in heavy duty batteries because they are strong, durable and lightweight.

Even the best battery will lose power and fail before it should if it is subjected to excess vibration, he added. The second point of the program is to make sure the battery is properly mounted in a place where it will get a minimum of vibration.

Correctly used holddown devices are vital for less vibration and longer performance. Heavy duty battery retainers should be used.

And another important factor to consider in the mounting of a battery is its accessibility, he noted.

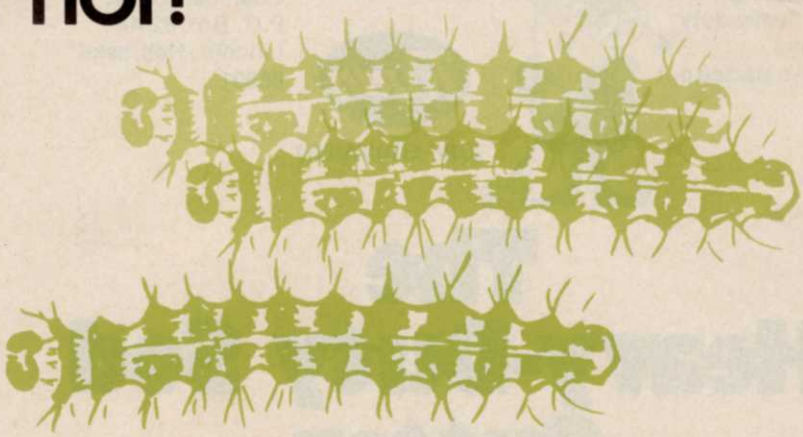
The water level of the battery should be regularly checked. The battery case and terminals should be kept clean and free from corrosion. Non-metallic grease can be used to retard corrosion on the battery terminal posts and the top of the battery should be kept clean.

Battery cables should be checked to see that they are not scuffed or worn through. Cables should not be loose and therefore subject to excessive movement or too taunt and subject to excessive stress.

"By following this three point program of educated buying; mounting the battery so that it will be subjected to a minimum of vibration and following a regular schedule of routine service checks, batteries will last longer and give better service. This is a big return for a small investment of time," observed Mr. Buesing.

The gypsies are coming

--ready or not!



Be ready this year with THURICIDE – the proven microbial insecticide!

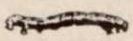
WIDELY USED AND PROVED—Thousands of forest acres in the northeastern United States area have been treated with Thuricide for control of gypsy moth larvae. Professional arborists and nurserymen have used it with outstanding success. It is the leading microbial insecticide—worldwide—for protection of agricultural food and other crops.

COMPATIBLE, READY-TO-MIX LIQUID—Thuricide comes to you in concentrated liquid form. There are no tedious mixing problems, no danger of nozzle clogging. Thuricide is highly stable, nonphytotoxic to foliage, and can be mixed with other insecticides.

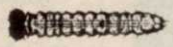
THURICIDE IS SCIENCE'S ANSWER to the professional tree man's problem of gaining *effective control* over gypsy and oak moth larvae—without affecting other forms of life. Thuricide's powerful active ingredient *(Bacillus thuringiensis)* is derived from nature herself. It brings *sure death* to leaf-eating worms, yet there is no risk of toxic drift or residues.

ATTACKS WORMS' GUTS—Once worms ingest Thuricide-sprayed leaf, their digestive systems are quickly destroyed, feeding stops, and death is *inevitable.* Even if worms seem to hang around after spraying, no worry, they're actually starving! Man, birds, beneficial insects and pets, however, are left untouched by Thuricide's unique and selective "target action." *For full particulars, see your Thuricide distributor. Or write Sandoz-Wander, Inc., Crop Protection Dept., Homestead, Florida 33030. Or call (305) 248-4671 collect.*

USED NATIONWIDE BY ARBORISTS FOR CONTROL OF THESE LEAFEATERS, TOO!

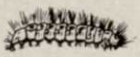


OAK MOTH LARVAE
Ca./trees & shrubs



CANKERWORM (Inchworm)
U.S./trees & shrubs

RED-HUMPED CATERPILLAR
Ca./trees & shrubs



FALL WEBWORM
U.S./trees & shrubs

TENT CATERPILLAR
U.S./trees & shrubs

SANDOZ **Thuricide®**

Number One Name in Microbial Insect Control!

For More Details Circle (151) on Reply Card

Cut, rolled, and ready for pick up.

That's the way our one-man sod cutting system delivers sod. It's the Ryan Heavy-Duty Sod Cutter with its Sulky Roller Attachment.

This machine cuts and rolls up to 2 acres of premium-cut sod per 8-hour day, and is built to take the punishment of commercial use. That's why we gave it a heavy-duty name.

We started out in this business back in 1948 with a uniquely-designed sod cutter. It became famous for its dependability. Today we make all kinds of quality-built turf-care equipment. But our reputation for dependability is still the same.

Write for more information on our dependable sod cutters. Ryan Turf Equipment, OMC-Lincoln, a Division of Outboard Marine Corporation, 2154 Cushman Drive, P.O. Box 82409, Lincoln, Nebraska 68501.

Ryan®
TURF EQUIPMENT

The Heavy-Duty Sod Cutter.

Glade Kentucky Bluegrass Now Available

Glade Kentucky bluegrass, a Rutgers University selection with improved shade tolerance, is now available through local wholesale seed distributors.

Doyle W. Jacklin, agronomist and marketing director of the Jacklin Seed Co., Spokane, Washington, said production of this low-growing, dense-sodding turf will be higher with this season's crop.

Glade was tested for more than nine years as P-29 by Rutgers in the cool season areas of the midwest and eastern states. More tests are now underway in the southern states and in Australia, Europe and Japan.

Dr. C. Reed Funk, associate research professor in turfgrass breeding at Rutgers did the initial selection of P-29. Jacklin said at the time of its selection the company was searching for a variety with greater shade tolerance.

Glade has an excellent test record and shows a higher level of resistance to mildew, hence a better ability to grow in up to 60 percent shade as well as sun, Jacklin said. It features an improved disease resistance to stripe smut, leaf rust and powdery mildew and blends well with other Kentucky bluegrasses and fine fescues.

It has a moderate to dark green color and grows lower with medium leaf texture finer tnan Merion, but wider than Fylking. It has the ability to produce dense, closely-knit rhizomes and root systems.

Jacklin said its properties will give a more beautiful lawn in the sun as well as in areas mixed with trees where there is moderate shade.

Aquatic Environment Described In EPA Book

The Environmental Protection Agency has published a guide to understanding the problems of water pollution in the aquatic environment.

Entitled, "Toward a Cleaner Aquatic Environment," the book will help the student as well as the expert to broaden his understanding of the investigative techniques used in the study of the aquatic environment, says Kenneth M. Mackenthun, author.

Copies of the book are available from the Government Printing Office, Washington, D.C. 20402, for $2.05. The stock number is 5501-00573.

WEEDS TREES and TURF

Wayne Carruth

A. Pete Nicas

Gary Johnson

Jack Murnighan

Stan Frederiksen

HERBICIDES
Where Is The Market?

PULL OUT SECTION

With MAINTAIN® CF 125, you can get along without so much mowing, pruning, trimming and edging.

Because practically everything MAINTAIN touches grows slower.

Just how much slower depends on what the weather does to your greenery and what kind of greenery it is.

For example, 200 acres of grassed median in Pennsylvania were treated with MAINTAIN early last spring, just after the first mowing. The grass was cut once more before Labor Day, and that was it. MAINTAIN saved the State Department of Transportation approximately 5 mowings that year.

What's more, MAINTAIN works on trees, shrubs and vines as well as grasses.

While it slows down the growth of turf, it practically stops broadleaf weeds in their tracks. Which, naturally improves the quality of the turf, as well as the effectiveness of your maintenance program.

And MAINTAIN can be sprayed where machinery can't go. Up steep slopes. Around guard rails. Along fences.

At Washington National Airport in Washington, D.C., MAINTAIN was used on a dangerously steep bank between two levels of the airport. MAINTAIN saved the maintenance department 5 mowings, and the chance of injuries was reduced immeasurably because the equipment was not used as often.

Of course, the best way to find out what MAINTAIN can do for you is to try it. And the best way to do that is to get in touch with your U.S. Borax distributor or your nearest U.S. Borax office:

234 Eglinton Ave., East Toronto
315, Ontario, Canada
1290 Avenue of the Americas, N.Y., N.Y. 10019
1700 East Sherwin Avenue, Des Plaines, Illinois 60018
300 Interstate N. Parkway, Atlanta, Georgia 30339
3075 Wilshire Boulevard, Los Angeles, Calif. 90010

U.S. BORAX
A MEMBER OF THE RTZ GROUP

With. Without.

For More Details Circle (103) on Reply Card

The Herbicide Market

CUSTOM APPLICATION

Editor's Note: Diamond Shamrock has been a leading innovator in the turf chemical business. Their herbicide, Dacthal, was one of the first selective preemergent herbicides used for the control of crabgrass and poa annua—labeled nearly fouteen years ago.

With the addition of other herbicides and Daconil 2787 fungicide, Diamond Shamrock has adopted a total market strategy when considering the turf market. This concept includes not only the golf course and recreational areas, but a major effort has been made by Diamond to offer products to the turf custom applicator.

One of the men at Diamond responsible for this marketing approach, and their entire turf product line, is Wayne Carruth. Wayne is 33 years old, a graduate of Mississippi State University, and has been turf products manager for 2½ years. In a recent interview, Carruth gave us his views on custom application and where he thinks this trend is headed.

WTT: How does the custom application in turf compare to the agricultural applicators?

Carruth: Custom application is an established and sought after service in all agricultural areas of the United States. Economics and techniques have changed in agriculture to the point that a midwest farmer may hire a local custom applicator with a Hahn Hi-Boy to spray a postemergent weed killer on his corn. A western rancher may hire an applicator with a converted World War II B-17 to spray range land. Both men getting the job done quicker, cheaper and, possibly, better than they could have done it themselves. On the other hand, custom application in the turf industry has trailed agriculture. The home owner and industrialists are slowly adopting custom application but few golf courses are utilizing it.

WTT: Why are golf courses slow to adopt custom application?

Carruth: There are only a few applicators offering this service to the golf courses.

WTT: Do custom applicators specialize, or does a lawn applicator also spray industrial areas?

Carruth: Some applicators cover both, but I usually divide turf applicators into two groups — those that specialize in lawns and those that specialize in industrial weed control and bare ground — however, I feel they both have a tremendous potential for growth.

WTT: Is this potential equal?

Carruth: Not totally, but it really depends on the area of the country you are referring to. The industrial applicator has been around the longest. Factories, schools, apartment complexes, and even drive-in movies have a need for weed control or sterilization — but no knowledge of what chemicals to use, or how to apply them. The custom applicator can complete these jobs effectively and economically because he has the equipment and the knowledge. What's more, he doesn't endanger the environment because he knows which chemical to use and at the correct rate. Let's face it . . . he won't use any more than he needs to, because his costs increase if he overapplies.

The custom lawn applicator, however, has the biggest market potential. There are millions of acres in lawns across the nation, and the average home owner doesn't really know how to care for his lawn. Not only that, but he doesn't want to spend the time required to maintain good turf.

WTT: Do lawn applicators offer essentially the same service?

Carruth: No—some offer a complete program of fertilization, weed and insect control, while others offer only a partial program of spring fertilization and crabgrass control. In my opinion, it's the applicator that offers the total program that will have the greatest success. If a home owner cares enough about his lawn to buy a custom program, he wants it to look good all season, not just in the spring.

WTT: Why has the home owner waited until now to adopt custom application for his lawn?

Carruth: Again I'll have to say, the service hasn't been offered

(continued on page NN)

Give crabgrass

(Like 2 feet in 10 weeks.
It'll also produce 3,000 seeds
to grow on you next time.
Balan® nips all this in the bud.)

a chance and it'll grow on you.

Untreated, there'll be a bigger crop next time, make no mistake. With your fertilizing and watering, crabgrass plants become fully-equipped seed factories in ten weeks.

Balan puts crabgrass out of business. Other annual weedgrasses, as well. A pre-emergence weed killer, Balan forms its protective zone where seeds germinate. Kills 'em, despite heavy rains and irrigations.

Works economically even on big areas. Costs $15-30 an acre. (Certain warm-season areas require two applications at a heavier rate for year-around control.)

Balan is convenient, too—granules are easily applied with your equipment. Make Balan's crabgrass control a key step in your lawn-care. See your turf supply and equipment distributor now. Or contact us for the name of the distributor nearest you. ELANCO PRODUCTS COMPANY • A division of Eli Lilly and Company • Dept. E-455, Indianapolis, Ind. 46206, U.S.A.

Balan® ELANCO

(Balan®—benefin, Elanco)

For More Details Circle (110) on Reply Card

The Herbicide Market

GOLF COURSES

By STAN FREDERIKSEN
Manager, Turf Products
Mallinckrodt Chemical Works

SOME FIFTEEN MILLION or more golfers currently play the eleven thousand-plus United States golf courses. Almost twelve million play at least 15 rounds per year, and the number of both golfers and rounds is rapidly increasing.

Characteristic of American golfers is their continuing demand for better playing conditions, especially more carefully manicured turf. This, of course, stems from their determination to continually improve their scores. One of their strongest demands is that the turf be free from weedgrasses and broadleaf weeds. This overall attitude contrasts with that in Europe and some other areas, where less-than-perfect turf is accepted as part of the "challenge" of the game of golf itself, particularly on fairways and in roughs.

On the other hand, it coincides with that of golfers in Japan, where the demand for immaculate golf turf, including freedom frem weeds, follows the traditional pattern of Japanese precision, neatness and care in grooming parks, gardens, home lawns and oher aesthetic and recreational areas. Long before the advent of herbicides, Japanese golf courses were hand-weeded by scores of maintenance crew members.

The late fifties and early sixties saw a strong surge of excellent weed control chemicals, including preemergence herbicides, which killed weedgrass seeds as they tried to germinate in soils, so that mature weedgrass plants would just never be seen. Full-season weedgrass-prevention thus became a reality.

Presently almost 1.5 million acres are devoted to golf course facilities in the United States. Of course, not all this acreage is in weed-free turf, or even in turf at all, because the facilities normally include forested and ornamentals areas, roads, the club house, maintenance buildings, tennis courts, parking areas, and the like.

At the same time, the recreational turf area on any course is sizeable and normally is considered, in order of maintenance quality, to consist of greens, tees, fairways and the rough. As freedom from weeds in roughs is of least concern, only a broadleaf weed control program is usually followed in these areas. Thus, the golf course market for herbicides is made up essentially of greens, tees and fairways.

Roughly half of the estimated eleven thousand golf courses are 9-hole layouts, These 5500 courses, divided by 2, would yield approximately 2750 "18-hole equivanlent" courses, which, added to the number of actual 18-hole courses, give an estimated total of about 8250 18-hole equivalent courses.

The average 18-hole course contains some 2½ acres of greens, 2½ acres of tees, and 40 acres of fairways, or a total of 45 acres of *fine* turf actually in play, and high quality-maintained for the golfer.

Simple arithmetic then shows the 8250 18-hole equivalent courses, with 45 treatable acres, each, to comprise around 371,000 acres, on which both preemergence weedgrass herbicides and postemergence broadleaf herbicides should be used routinely.

The dollar golf course herbicide market depends of course on such things as product used, cost (not per pound or gallon, but per application per acre per season), whether combination formulations are used (meaning a "one time" labor expense) or separate applications of individual chemicals, each requiring the expense of a separate application, the residual effect of the product used, and other factors.

Typically, any course will strive for 100% fine turf coverage of greens, tees, fairways and the clubhouse lawn. In this market bare ground is not wanted, and in many cases simply is not tolerated. The superintendent's weed control program, therefore, is esesntially one of preventing weedgrasses (preemergence control) and eliminating already-growing broadleaf weeds (postemergence control) from the desirable turf cover. As to weedgrasses (crabgrass, goosegrass, poa annua and other annuals), excellent preemergence herbicides are available, including Pre-San (Mallinckrodt), Betasan (Stauffer), Balan (Elanco), Dacthal (Diamond Shamrock), and others. The facts to remember about these are:

1. They must be applied before the weedgrass seed germinates.

2. They must be well watered-in, to form an inch-deep or more soil "barrier" to stop the weedgrass seeds as they try to germinate.

3. The treated areas must not be disturbed, after a preemergence application, by turf renovation of any kind (aerating, vertical mowing, etc.) as this would break the "barrier" and bring to the surface weedgrass seeds in untreated soil where they would germinate and thrive, thus destroying the application's effectiveness.

Costs for pre-emergence materials

(continued on page NN)

Beautiful turf is no accident. Make it happen with Acti-dione® 4-season disease control

The old saying that beauty is more than skin-deep is nowhere more applicable than on a golf course. Beautiful turf will not retain its beauty unless it remains healthy. In addition to normal wear and tear from golf play and stress from variable weather conditions, fungi are an ever-present health threat to turf. There's little you can do about golf play and weather, but you can control fungal diseases. An effective, economical way to combat fungal growth all year long is to use Acti-dione® Thiram and Acti-dione TGF® in a four-season disease control program. With fungi out of the way, turf has a better chance to grow strong and healthy — to resist weed infestation, to bounce back from injury and to survive adverse weather conditions. See your TUCO distributor today for complete information and assistance in planning a four-season disease control program with Acti-dione turf fungicides.

In Spring, watch out for Leaf Spot

The same conditions that promote spring growth can open the door to leaf spot, dollar spot and melting-out. For best results, apply Acti-dione TGF every 7 to 10 days, starting right after the first mowing.

Use Proxol* 80SP to help prevent insect damage

TUCO Division of The Upjohn Company, Kalamazoo, Michigan 49001

For More Details Circle (113) on Reply Card

*Trademark

Why 74 hard-to-please businessmen

A whole lot of exciting things have been going on at Jacobsen lately.

So all 74 of us Jacobsen distributors (and over 200 of our salesmen) came in for a hard-nosed look. And we went home smiling. There were a lot of good reasons. Here are some of them.

First, the new Greens King. Jacobsen has redesigned the 1974 model. The added features give even greater performance.

Then, the Turf King 76 and Turf King 84 were also redesigned. Which took some doing since they were proven winners to start with.

To round out the line with a smaller mower, Jacobsen is introducing the brand new Turf King 70.

There's a lot more. Like the new riding sand

went home smiling.

trap rake that's called the Trap King.

We also saw the new professional Sod Cutter. And the new UV4 complete with 1-ton dump.

Not to mention the new Cruiser-2 Truck that's an ideal runabout for any area.

We also heard about other innovations all across the board. In just about every way that clearly puts Jacobsen "out front by design."

So next chance you get, talk to your Jacobsen distributor. He's got some new and exciting things to say about turf care. We think you'll like to hear about it. We think you'll go home smiling, too.

Your Jacobsen Distributors.

Before we sell it, we buy it.

For the name of the distributor near you, write: Jacobsen Turf Distributor Directory, 1721 Packard Avenue, Racine, Wisconsin 53403.

The Herbicide Market

UTILITY WEED CONTROL

By RICHARD E. ABBOTT
Right-Of-Way
Maintenance Supervisor
Ohio Power Company

THE U. S. Departments of Agriculture and Interior in their publication, "Environmental Criteria for Electric Transmission Systems," estimated there were 300,000 miles of overhead electric transmission lines representing nearly 4 million acres of rights-of-way in 1970.

By 1990 it is estimated another 3 million acres of right-of-way will be required. Vegetation manipulation on these rights-of-way will provide the utility arborist and custom applicator diverse opportunities to apply their technical skills and practical know how.

Utilities are increasingly facing a dilemma. On one hand they are mandated to provide dependable, economical electric service and are highly regulated by state and Federal agencies. On the other is the necessity to provide this service within current environmental considerations with a minimum intrusion on the landscape and biosphere. Compounding the problem is the responsibility to meet all these demands without increased costs, if possible, or contributing to the energy crisis.

Substations, transmission lines and power plants have become a focal point for action and criticism in responding to the national concern for protecting the environment. People protest the construction and operation of these facilities in their neighborhood, but no one wants to be without electricity.

After electric service reliability, engineering, environmental and economic considerations have been satisfied, then multiple land use, conservation, wildlife use, landscape and other aspects must be considered in designing, constructing, maintaining and operating transmission lines, power plants and substations. Utilities employ arborists, landscape architects and horitculturists. They perform extensive plantings of trees and shrubs to improve the appearance of their facilities and design them for minimum intrusion on the environment.

Trees and brush must be prevented from contacting overhead electric conductors. The higher the voltage the greater the necessity for adequate tree and brush clearance. A town could be blacked out by an interruption to a 69,000 volt line, while an entire city could be affected by an interruption on a 345,000-volt line.

Ground and aerial spraying of herbicides has been the principal vegetation control technique used to eliminate or manipulate woody vegetation on these lines. No one chemical, technique, application or unit of equipment will satisfy all vegetation control requirements. The utility arborist and custom applicator must have sufficient technical skill to recognize and utilize the optimum tool for each situation.

Among the herbicides most frequently used for woody brush control are 2,4-D, 2,4,5-T, Tordon, Banvel Ammate, Tandex, Hyvar, and 2,4,5-TP. These are chemically formulated for use with water, oil or as thickened emulsions.

Aerial spraying with helicopters does the majority of work in mountainous and inaccessible terrain. For efficiency, economy of operation, speed and effectiveness, absolutely nothing can approach this method in these situations. Thickened (invert emulsions) formulations and special spray application equipment to prevent these materials from drifting off the R/W application area have been developed by the chemical companies. A helicopter using these special formulations and application equipment can fly above a transmission line and precisely apply the material without spray drift damage to adjacent vegetation.

Stem foliage sprays applied at concentrations of one to two gallons of herbicides per 100 gallons of water is the most common method. Four wheel drive equipment with a 400 to 800 gallon hydraulic sprayer is driven over the right of way.

Usually spraymen with individual hand spray guns cover the entire plant from top to bottom to the point of run off with the herbicide mixture. Another variation is the use of an OCS nozzle to apply the herbicide mixture as a broadcast spray 33 feet either side of the truck. Here the truck is driven down the R/W at a fixed speed while the spray mix passes through the OCS nozzle.

Light weight high-pressure nylon spray hose has substantially decreased the physically effort and in-

(continued on page LL)

Beat the big cutting job
with the Hahn-Ransomes 5/7.

The big job. The acres of grass mowing you've come to dread. There are so many ways it can beat you. But now, the Hahn-Ransomes 5/7 helps you turn the tables.

Beat troublesome obstacles. Hydraulic finger-tip control tucks unused mowers out of the way in seconds when trees or walls get in the way.

Beat the weather. The independently powered reels permit all season, all weather mowing . . . and reverse power helps unclog wet reels.

Beat the terrain. The 5/7 is the only gang mower that can climb steep slopes and make sharp turns with all seven reels cutting. Floating heads follow every ground undulation, while power is constant at cutting reels for fine finishes no matter what the terrain.

Beat varying grass heights. Height-of-cut adjustment—from ½" to 3"—can be selected instantly without the use of tools.

Beat the clock. Your big jobs are cut down to size. Cut up to 15' swaths, then hydraulically fold up all units in seconds for quick transport.

Of course, you may not encounter all these problems on your big cutting job. In that case, we suggest the Hahn-Ransomes Trailed Gang Mowers. For fine finishes or for grass up to 8", see the Sportscutter or Magna trailed gang units. Both can cut swaths from 2'6" to 20'6". Both feature impact-resistant cutting reels, heavy rear rolls for faster cutting, universal framework and quick removable reels for rapid mid-season grinding.

Ask your Hahn distributor to see the 5/7 or Trailed Gangs.

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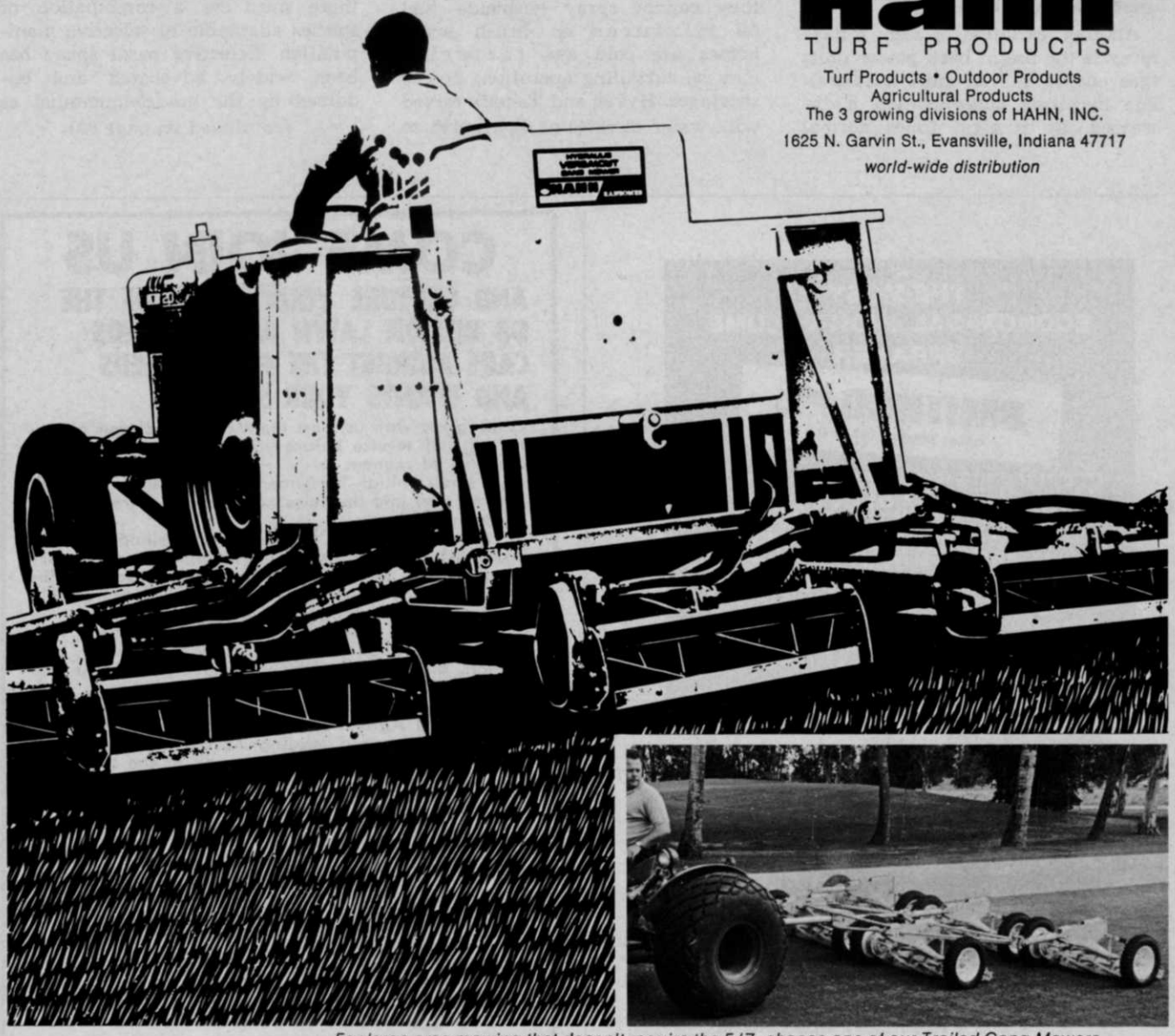

For large area mowing that doesn't require the 5/7, choose one of our Trailed Gang Mowers.

For More Details Circle (112) on Reply Card

UTILITY WEED CONTROL

(from page JJ)

creased the productivity of spraymen in those areas where they must resort to dragging hose. One thousand feet of this hose nylon weighs less than 100 feet of conventional high pressure rubber spray hose.

Equipment used has progressed from surplus four wheel drive army trucks to Bombardiers — tracked vehicles especially designed for use in muskeg and swamp — to Timberjacks — rubber tired, articulated, heavy duty vehicles developed for skidding logs out of the woods.

A Timberjack sprayer with a 800 gallon tank basal sprayed 593 brush acres at a cost of under $70 per acre, and stem foliage sprayed 734 brush acres at a cost of under $55 per acre. These costs are 30 to 40 percent less than using conventional four wheel drive spray equipment. The $26,000 acquisition cost limits the number of these machines available.

Another variation of stem foliage spray is the use of back power units (gas engine driven mist blowers). The herbicide concentration is increased up to eight times normal and the air blast from the machine is the carrier used to apply the concentrated mix. Both stem foliage spray and basal can be applied with this equipment. Advantages of this equipment are the small investment required and the ease of operation in difficult terrain. Carrying this 30 to 40 lb. weight around on their back all day while struggling through the brush is a limitation.

Basal spraying with 2,4-D or 2,4,5-T and fuel oil during the dormant season has been extensively performed to control hard to kill species (ash, oak, hickory) and for selective applications.

Another challenge facing the chemical company, utility arborists and custom applicator is the necessity for developing an environmentally acceptable, economical substitute for fuel oil in basal spraying that can be used in the dormant season. With the energy crisis and fual oil shortage, utilities realize they cannot spray herbicide fuel oil mixtures on brush when homes are cold and factories may be curtailing operations due to shortages. Hyvar and Tandex mixed with water at rates of one-fourth to one-half pound per gallon and applied at the base of the plant offers the most promise at the present time. However, both these materials are residual type chemicals which are subject to lateral movement off the R/W under some conditions and must be utilized with caution adjacent to sensitive or desirable vegetation. Also, the water herbicide mixture freezes in cold weather.

Hydraulic sprayers, back pack power units and back tanks all have been used to apply the herbicide fuel oil mixture to the basal 12 inches to 36 inches of the plant. It is important to get coverage completely around the stem to ensure complete kill.

Selective basal spray is used to remove tall growing species of woody plants on the R/W without disturbing the low growing species of shrubs, weeds and other desirable vegetation. First and foremost, there must be a combination of species adaptable to selective manipulation. Selective basal spray has been widely advocated and endorsed by the environmentalist as

(continued on page 00)

THE MOST ECONOMICAL, HIGH-VOLUME SPRAYER

SMITHCO inc.
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THUNDERBIRD

The heart of the sprayer is the SMITHCO THUNDERBIRD 2-stage centrifugal pump. With only 3 moving parts, it can deliver up to 50 gpm. The Smithco Fiberglass tank combines the absolute maximum in corrosion resistance and agitation with ease of cleaning and excellent appearance.

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- *Write for demonstration or further information.*

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A small initial investment of less than $385.00 will put you into the sales/service lawn care business immediately.

Try our advertising, promotion and selling methods, along with our products and equipment on a very small scale — See for yourself the tremendous profits and prestigeous professional business you can quickly build along with complete customer satisfaction.

Over twenty four years of unequaled success with exceptionally high profits, dramatic advertising, promotion, and public relations, uniquely different and scientifically proven products and techniques, complete thorough training with field assistance plus a total R & D Agronomy Department with the nations most successful and leading Agronomists guarantee you success and positive results, all of the time.

Get started on a small scale, either full or part time — let us prove to you the tremendous future that is waiting for you.

No initial large purchases — No contracts — No franchise agreements — Just plain old proof.

If you become successful initially — You will want more. **Sign up Today** — Limited openings available.

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Light touch, with turf tires or without.

Myers TurfLine Sprayers give you a "light touch" all over the course in models with tires or without. The TL12TMG (shown above) is our versatile, new, tractor mounted boom sprayer. It features Myers 12 GPM Du-All Piston Pump, a 100 gallon fiberglass tank and 21′ fairway boom. Tank also has sight gauge and paddle agitator. This "light touch" sprayer, without wheels, is only one of many Myers TurfLine units that are especially designed for golf course maintenance. Other Myers TurfLine sprayers with wheels are available with high flotation tires in dual wheel and four wheel models. For details, call your Myers TurfLine dealer or send coupon for free catalog. Myers TurfLine Sprayers. To make your job easier, help speed up your work, keep the course looking great and let you stay within budget.

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GOLF COURSES

(from page FF)

range from $20.00 per acre up to $55.00 or so per acre, per treatment, depending upon many factors. Those costing most per acre per treatment are usually regarded as least expensive in the long run. This is because (a) they have several times the residual control, thus requiring far fewer applications, (b) they control all major annual weedgrasses, not just one or two, and (c) they usually are the safest on the desirable grass, being the only ones actually registered and labelled.

Caution must be observed in using any preemergence weedgrass control. It should not be applied at all if the turf cover is mostly annual weedgrasses. The residual soil effect will prevent germination of any grass seeds planted during the working life of the product after application, including seeds of the desirable bluegrasses, bentgrasses, etc.

Where a fairway contains more than 25% Poa *annua,* best control would be via a new approach, such as with Po-San (Mallinckrodt) which, when sprayed on fairways (not watered in) kills no grass — not even existing mature Poa — and produces no preemergence effect or harmful soil residues. It simply stunts the existing poa and prevents its production of seedheads. Thus desirable grasses fill in. The poa crop the following year is prevented. After a few years the poa population is down to where preemergence materials may be used safely.

As to broadleaf weeds, these are normally best eliminated by postemergence applications of one or more of the many herbicides marketed for years, such as 2, 4-D, 2-4-5-T, MCPP, dicamba and others. Recently, superintendents are using a 3-way synergistic combinations of 2,4-D, MCPP and dicamba marketed as Trex-San (Mallinckrodt) and Trimec (Gordon). These latter are so effective that the manufacturers assert, "We have yet to find a broadleaf weed that Trex-San won't control." A single treatment, properly applied, will safely control most broadleaf weeds from any fine turf, and at the same time destroy the seed-producing capacity of these weeds, thus greatly reducing the likelihood of a serious infestation the ensuing year.

Further, a Trex-San or Trimec application is inexpensive — about $4.50 to $5.00 per acre. These materials are systemically absorbed through weed leaves, and thus should not be watered in. One application controls all emerged weed plants. A second application is not needed until weed seeds germinate and produce new plants.

Figuring a single preemergence treatment in early spring and another in fall, along with roughly two applications per year of a postemergence broad-spectrum broadleaf herbicide, the turf manager can readily devise his own program to eliminate weeds and weedgrasses, and calculate his "per application per acre" cost. Above all, he's sure his costs over the first few years will greatly diminish during succeeding years. As the weedgrasses and broadleaf plants are eradicated and replaced by fine turf, fewer weeds will have the opportunity to invade desirable turf areas. Thus, less frequent weed control applications are needed resulting in lower weed control costs. It is axiomatic that the best weed control is a strong stand of healthy turfgrass.

The golf course weed control market is nationwide. However, it is more strongly concentrated in the major population centers, because the number of golf courses tends to relate to such factors as numbers of people in the area, general affluence (or lack of it) of those people, and so on. Weather, too, determines not only golf course concentration, but often golf course quality and length of playing season.

In the more affluent Northeastern states, for example, there may be an 18-hole equivalent course for every 11 or 12 thousand people, whereas in some of the less affluent southern states there might be only one course for every 35 or 40 thousand people.

Further, the ravages of winter in northern states may limit the length of the playing season to two or three months per year, while courses in the milder climates of the south will be in play year-round.

This should be kept in mind in assessing market sizes and characteristics to determine weed and weedgrass control opportunities.

EQUIPMENT

Weed control application equipment should normally be of the boom type, with adequate pressure to drive the spray solution into the turf. Boom sprayers in this usage are particularly important. They produce little or no drift, which is characteristic of the high pressure gun sprayers. Of course, for spreadable granular types of weed control chemicals, the drop-type spreader is considered best for uniformity and accurcy. Centrifugal types may offset these features with broader coverage and greater speed of application.

Preemergence control applications are usually made in early spring and/or early fall, so that actual marketing of preemergence chemicals precedes these periods by several months. Postemergence chemicals for broadleaf control, on the other hand, are used over a longer season — often throughout the year (depending upon the area). Postemergence chemical marketing begins well before the active weed-growing season and extends throughout the season.

For an excellent picture of the place of herbicides and other turf chemicals in golf course turf maintenance, turf managers should obtain, from WEEDS TREES AND TURF magazine, its significant survey on turf chemicals usages which this important journal published in 1969. It is well worth reading and careful study. □

CUSTOM APPLICATION

(from page CC)

until the last four to five years. In many areas, it still isn't available. Also, people are devoting more time to recreation and they simple would rather play golf than fool with their lawn. Let's face it . . . when the average home owner does take a stab at growing turf, a great number either streak, burn, or don't get enough product on to do the proper job.

WTT: You mentioned that this business was increasing. How do you measure this increase?

Carruth: My best yardstick is Diamond's sales to turf custom applicators. In the past two years, our sales of Dacthal to this market has doubled. If it weren't for shortages in liquid fertilizer, our sales would probably double again in 1974.

WTT: Is there any one goal you feel a lawn applicator should adopt?

Carruth: Definitely. Give your customers a good-looking lawn all season long. The home owner doesn't know or care what you do to his lawn. His real concern is what his lawn looks like.□

par ex® IBDU®
PROFESSIONAL PRODUCTS (isobutylidene diurea)

USE SOME SELF CONTROL

Ordinary slow release nitrogens just can't seem to control themselves. In fact, their behavior is as fickle as the weather.

Typical urea-formaldehyde nitrogens depend upon soil temperature and bacterial activity for their release to the soil. During hot weather, the soil temperature and bacterial activity are both high, so they release very fast. During cold weather, they have difficulty releasing any nitrogen to the soil. They have very little self control.

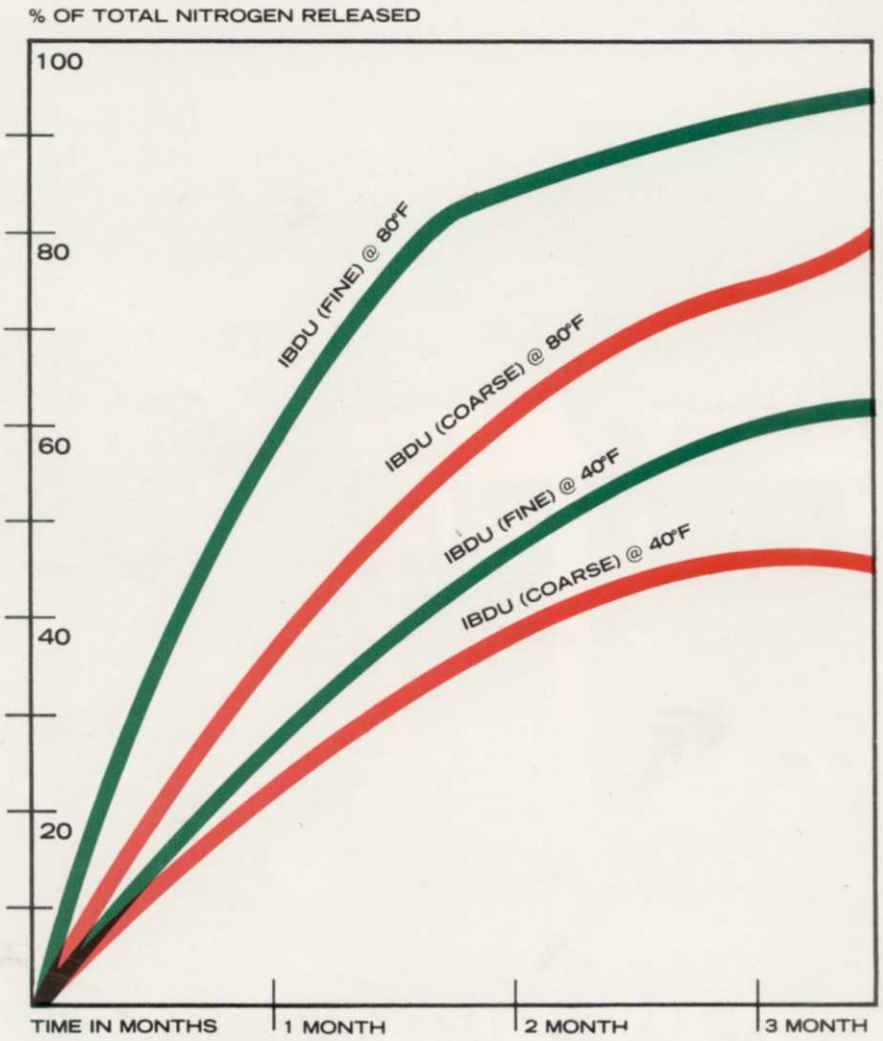
IBDU is a unique slow release nitrog
Its release rate is primarily dependent
normal soil moisture and particle ize.
temperature and bacterial activ na
little effect upon the rate of release o

And that means that IBDU gives yo
control over the feeding of your turf.

On cool season grasses, IBDU will f
in the spring and longer in the fall, exte
overall growing season.

In southern grass areas, IBDU feed

NITROGEN RELEASE RATES EFFECT OF TEMPERATURE VARIATION



SOIL MOISTURE – 35% TEMPERATURE – 40-80°F.

The above chart shows that IBDU is only slightly affected by changes in soil temperature. In a temperature range from nearly freezing (40°) to very warm (80°) coarse IBDU will release 40-60% of its total nitrogen in a 2 month period, while fine IBDU releases somewhat faster.

UF nitrogen sources release quickly in hot weather and almost not at all in cold weather.

IBDU CONVERSION TO SOLU EFFECT OF BACTERIAL ACT

SOIL MOISTURE – 60% TEMPERATURE – 80°F

The above chart shows that IBDU does its release rate from sterile to non-ster

UF nitrogen sources depend upon bac release to the soil, while IBDU rel ses (normal soil moisture).

par ex® IBDU®
PROFESSIONAL PRODUCTS (isobutylidene diurea)

gen source.
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S
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ending the

ing can be

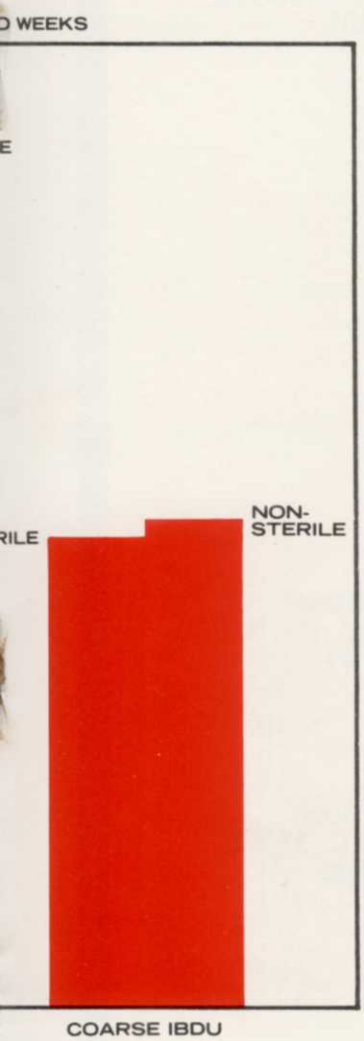
more evenly continued throughout the hot summer months without fear of rapid growth or turf burn. In addition, it is ideal for overseeding in the cooler months.

By using IBDU, you can feed your turf at a more even and more predictable rate.

Now that you know you can more closely control your turf's response by using IBDU, and that only Par Ex contains IBDU, it makes a lot of sense to buy only Par Ex products.

That's using self control.

UBLE FORMS
IVITY



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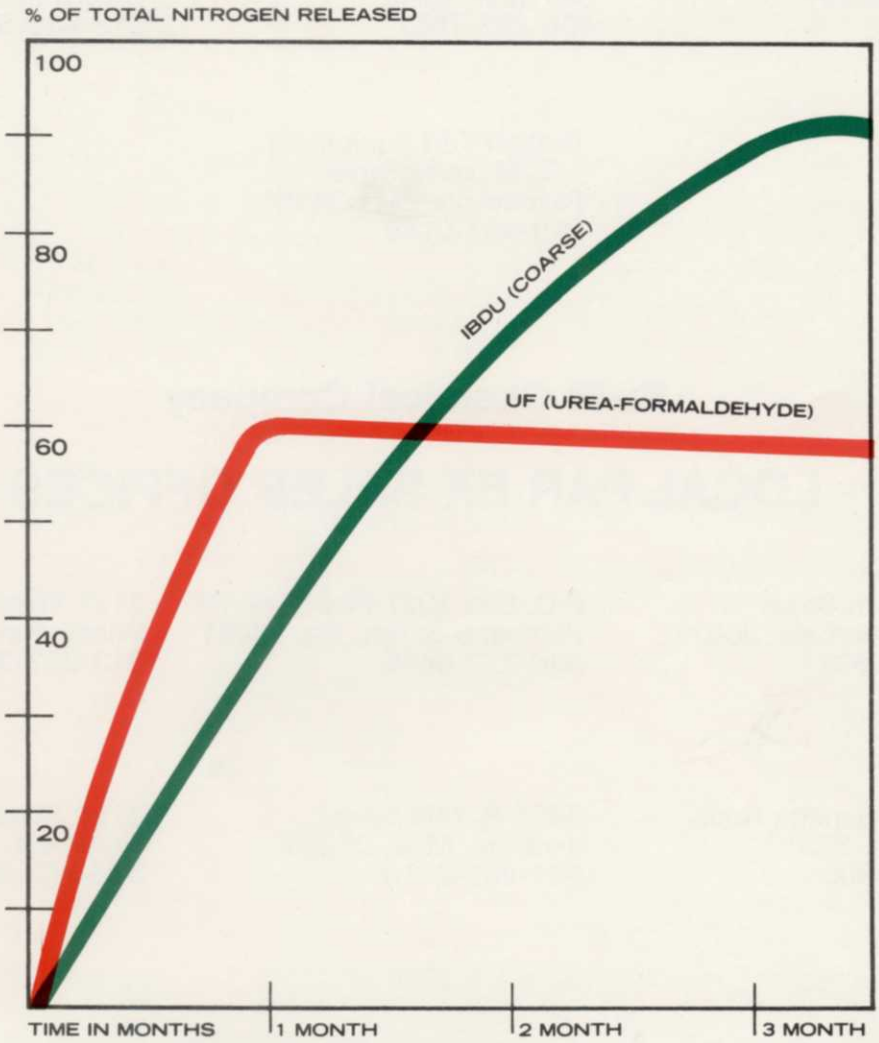
to the soil by hydrolysis

NITROGEN RELEASE RATES
IBDU VS. UREA-FORMALDEHYDE



SOIL MOISTURE – 60% TEMPERATURE – 80°F.

The above chart shows the result of more even release rates. IBDU, since it depends primarily on normal soil moisture and its own particle size, releases longer and more evenly than UF nitrogens.

By using IBDU, you can feed your turf at a rate that is more even and more predictable. No matter how the soil temperature and bacterial activity change, IBDU will continue to release at essentially the same, even rate – lasting a minimum of 12 weeks.

(For your local distributor turn page)

par ex®
PROFESSIONAL PRODUCTS

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714-398-4591

Agri-Turf Supplies
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Santa Barbara, Calif. 93103
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Pen-Gro Sales Co.
P.O. Box 2326
So. San Francisco, Calif.

Foster-Gardner, Inc.
Santa Ana, Calif.
714-997-3530

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San Jose, Calif.
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Eastern Turf Equipment
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Swift Chemical Company

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521 W. Sixth Street
Houston, Texas 77007
713-864-4496

P.O. Box 1488
Vancouver, Wash. 98660
503-285-0493

UTILITY WEED CONTROL

(from page LL)

the acceptable technique In areas such as upstate New York, it was relatively easy to use this technique on the combination species of vegetatoin in the Catskill Mountains.

It is much more difficult to apply this selective basal technique to those species of vegetation growing on the hills of southern Ohio. The lack of low growing species of shrubs and rapid regrowth rate of undesirable species severely limit the areas adaptable to this technique Essential to a good basal program are workmen instructed in plant identification working under close supervision.

Granular or pelleted materials containing Tordon, Tandex, Hyvar or Dybar are available for placement in the root zone area of the undesirable plant. Moisture dissolves the pellets and carries the chemical into the root zone where it affects the plants.

My twenty one years of spraying utility R/W's has produced innumerable changes in attitudes, requirements, chemicals and results.

This gigantic brush chopper built by National Hydro-Ax can clear brush at a cost of about $64 per acre. This compares favorably with other methods of brush control along utility rights-of-ways.

In 1953 a desirable R/W was one with all the brush eliminated and grass as a ground cover. Brush was sprayed in deep hollows where conductors were high above the mature height of the trees, to provide access for men and equipment in case maintenance was necessary. Today a satisfactory R/W may be covered with brush which does not interfere with the maintenance and operation of the line.

Years ago if a herbicide did not

(continued on page RR)

UNIROYAL

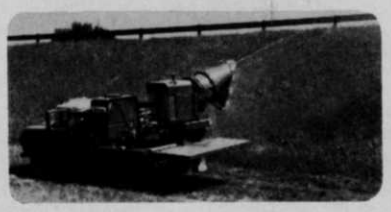
SLO-GRO®...now more than ever the key to lower mowing and pruning costs.

If rising labor costs are keeping you from doing the kind of mowing and pruning job you know should be done, maybe the answer you're looking for is Slo-Gro.

Slo-Gro is a unique chemical growth retardant that economically controls the growth of trees, grass, shrubs and ivy. In tough-to-control areas, Slo-Gro can usually do the job better, and at less expense than mechanical methods.

It's fast, systemic, safe, and produces no persistent residue. For complete details write: Uniroyal Chemical, Division of Uniroyal, Inc., Naugatuck, CT 06770.

As with any growth regulant, always follow instructions on the label.



Roadside Grass Control. Slo-Gro is recommended for use on all "commercial" turf areas that require regular maintenance, but are difficult to mow. Maintenance situations like highway medians, airfields, steep embankments, ditches, and grassed areas around fences and guard rails.

Growth Control on Trees. Slo-Gro inhibits tree growth by stopping the terminal growth of woody plants. Primary applications include control of tree size under power lines, along streets, or wherever excessive foliage is a problem.

Golf Course Maintenance. While Slo-Gro is not recommended for general use on fine grass areas such as residential or commercial lawns, it has been used extensively on golf course roughs. It can also be used in conjunction with herbicides wherever weed control is required.

For More Details Circle (147) on Reply Card

For More Details On Preceding Page Circle (124) On Reply Card

Give us 20 minutes of your time and we'll give you a watch with your face on it.

20 minutes, that's all we ask for.

That's all the time we need to show you right on the spot, in a live demonstration, how to control broadleaf weeds and brush economically and efficiently, without damage to the surrounding environment.

We'll show you in just 20 minutes how our Visko-Rhap herbicide drift control system clears roadways, power lines and waterways without herbicide drift that could otherwise lead to costly damage suits.

We'll show you how Visko-Rhap applies in thick, spaghetti-like strands that break up into heavy oil coated droplets before contact. They will hit and stick, controlling only the growth you want to control.

Aquatic use of Visko-Rhap in drainage systems keeps ditches and canals weed free.

Visko-Rhap clears right of way along railroad tracks.

Roadside application of Visko-Rhap adjacent to cropland.

Power lines cleared by Visko-Rhap of unwanted foliage.

Give us the 20 minutes and we'll not only give you a fine 17-jewel watch with your face on it, we'll give you something even more valuable.

Peace of mind with Visko-Rhap.

Rhodia/Chipman Division
120 Jersey Avenue, New Brunswick, New Jersey 08903
Attention: Dave Perron
Gentlemen:

I am responsible for weed control in my organization. I would like to give you 20 minutes of my time for a live demonstration of Visko-Rhap. I understand I will receive a watch from you with a caricature or a photo of my face on it in return. Please contact me in order to arrange a demonstration.

Name _____ Organization _____
Address _____ Phone # _____
City _____ State _____ Zip _____
Job Title _____
No. of sq. ft. requiring herbicide drift control _____

(Note: Offer expires October 1, 1974)

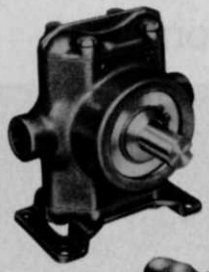
Visko-Rhap™ by Rhodia CHIPMAN DIVISION

For More Details Circle (143) on Reply Card

Hypro Pumps

for applying weed and turf chemicals

PISTON PUMPS

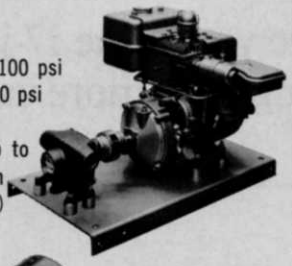


Series C5210 BIG TWIN
10 gpm (at 600 rpm)
400 psi pressure
also available with gas engine

Series 5400 4-CYLINDER PUMP
25 gpm output at 600 psi

ROLLER PUMPS

Series GN6310R
6.9 gpm at 100 psi
5 gpm at 200 psi
3 hp engine
(develops up to 250 psi with 4-hp engine)



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Output 12 gpm (at 540 rpm)
Pressure to 300 psi.

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UTILITY WEED CONTROL

(from page 00)

completely kill a plant it was unacceptable. Today if the herbicide will only partially kill or retard the growth of the brush, as long as it never grows into the wires, this is acceptable. A helicopter application of herbicide that only partially kills the brush is the most economical and practical means to prevent tree-wire contact in mountainous and inaccessible terrain. Additionally the partial kill reduces the possibility of erosion developing.

Research and development is being carried out on the use of helicopters to apply growth inhibitor chemicals aerially to retard the regrowth of brush without any elimination of plant material.

Mechanical or manual reclearing of brush on R/W's has increased in volume and importance particularly in the urban/suburban areas and because of property owner refusal to allow herbicide spraying. The public will not tolerate the brown-out associated with stem foliage spray in developed areas. Additionally adjacent home owners will object if the R/W does not have an acceptable appearance adjacent to their manicured lawns.

Equipment for mowing and reclearing varies from rubber tired farm and industrial tractors with rotary or flail mowers to large, articulated, rubber tired, construction machines capable of cutting an 8-inch (DBH) softwood. Recently we used a Hydro-axe to reclear spray refusals throughout a five county area. Brush up to 15′ or more tall was recleared on 148 brush acres for less than $65.

Another tool which we have tried is the brush chopper roller. This has sharpened blades around the circumference of a large diameter weighted roller. A bulldozer is used to pull the roller. This machine recleared 121 brush acres for less than $70 per acre. One drawback is the difficulty in transporting equipment between work locations due to the size and weight involved.

Landscape planting of trees and shrubs is being selectively performed around substations to enhance their appearance and reduce the impact of these facilities. Mowing of grass, insect and disease control, pruning and fertilizing all provide additional opportunities for the products and talents of the Green Industry. Ohio Power Co. has landscaped 23 buildings, 76 substations, and 2 power plants since 1966. This gives some indication of the scope of work being performed.

Weed control to reduce the fire hazards in the gravel areas around substations, power plants, coal piles, etc. using residual type herbicides is another area of operation for the custom applicator. Ohio Power Co. practices weed control on 493 acres around the state. Landscape plantings adjacent to these gravel areas will be injured if the herbicide used moves laterally. Consequently materials that will not affect woody vegetation or established lawns must be used in those areas.

Seeding of disturbed ground on newly constructed transmission lines, to prevent erosion and reduce the regrowth of brush is another area for the Green Industry to provide a service for the utility. Approximately 158 acres of R/W were seeded by Ohio Power Co. in 1973. A new innovation being evaluated is the application of seed and fertilizer by helicopter to disturbed and undisturbed ground on R/W's.

What do I see as the future of electric utility vegetation management? Currently, it is estimated the electric utilities spend approximately $40-50 million on herbicide application, $10 million on reclearing and mowing transmission R/W's, and $15 million on landscaping and maintenance. This volume of work will increase at a steady 5 to 15 percent as new facilities and lines are constructed.

Diversity of requirements, objectives, techniques, chemicals and methods will test the technical and practical skills of all concerned to comply with regulatory, environmental and aesthetic demands.

Aesthetic considerations will become more significant with selective clearing, selective spraying, retention of trees and shrubs at R/W road crossings, reseeding R/W's for wildlife utilization and multiple R/W use all being practiced to a greater extent.

Landscaping and associated aesthetic improvements will increase in volume and sophistication. Design, construction and maintenance will provide more opportunities for the green industry.

Vegetation control by herbicide application will not increase by the same magnitude as other operations. More spraying will be selective, greater emphasis will be on multiple use. With current farm prices increased acreages will be put into agricultural production by bulldozing out the stumps and brush.

The Herbicide Market

AQUATIC WEEDS

By JACK MURNIGHAN
Manager, Aquatic Division
Pennwalt Corporation

AQUATIC weeds, pond weeds, or lake grass—water junk, scum or flotsam—alligator weed, chara, hydrilla or hyacinth, call it what you like. Unwanted aquatic weeds and algae are increasingly prevalent throughout the United States . . . and represent a potentially large and viable market for professional applicators.

How big is anybody's guess. Excluding tidal areas, aquatic environments in the United States exceed 42 million acres. But 42 million plus acres of market? Not really.

Three major factors must combine to create a market—a body of water, aquatic vegetation and people who want or need to use the water. Water, weeds and people. Market potential is everywhere. But, so far, we've only seen the "tip of the iceburg."

Commonly, the market is identified as lakes and ponds used for recreation and fishing. Only in Florida and other selected southern states has real interest been generated for other purposes—specifically, control of aquatic weeds and algae in flood control and irrigation canals.

Water weeds and algae create a number of problems. In recreational and fishing areas, they limit boating and swimming enjoyment, tangle fishing lines and may create an imbalance in fish populations. In farm and industrial uses, they may reduce the holding capacity of the lake, pond or canal by as much as one third, restrict or clog irrigation equipment, and lower the efficiency of cooling towers and pumping equipment. And in almost all cases, when allowed to grow, they become smelly and ugly eye-sores, reducing property values. Also, algae and aquatic weeds provide a home for mosquitos and other insects.

The market, then, is certainly not limited. The key seems to be identifying it within your local area. Some of the places to look include: lake associations, estates, farm ponds (irrigation or recreation), forest preserves, resorts, lakefront property owners, fee fishing lakes, hatcheries, golf courses, camps, flood control districts, real estate developments (with man-made or natural lakes), dairy and feedlot operators (with settling pond requirements), water companies (private & municipal), industrial companies with cooling towers or water emphasis landscaping, rice farmers, marinas, and irrigation districts.

Obviously, the market opportunities vary in different geographic regions. The Great Lakes region has a high number of weed-infested lakes. Southern California has, perhaps, the greatest number of golf courses with water-hazards per capita in the United States. Florida has a great number of flood and irrigation canals while parts of Idaho and Washington have some of the largest irrigation systems in existence.

Pennwalt Corporation, one of the major manufacturers of aquatic weed control herbicides, is seeing sales trends shift from primarily the recreational lake and farm pond markets in the north-central United States and Florida to more diversified markets throughout the nation.

Why go into a business of this type? Profit! Also, the professional aquatic vegetation control operator is in very short supply. As an adjunct to an already existing professional herbicide applicator, it becomes an added service to offer customers and a further means of applying already existing equipment and technology.

Control of aquatic weeds is generally achieved through one of three methods; mechanical, biological and chemical.

Mechanical cutting, or pulling, is generally very short-lived. Plants frequently return within weeks. Dredging or drying up the canal or pond and scrapping it clear can be effective, as these processes eliminate fertile deposits and deepen the canal or pond. Unfortunately, this cannot always be done.

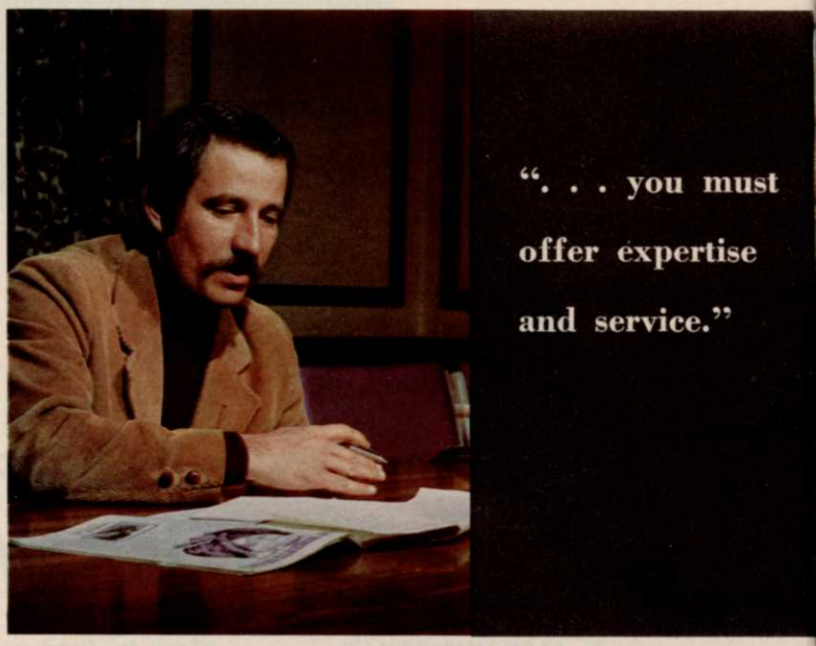
Mechanical harvesting equipment is avaliable for large operations. It is expensive, often inefficient and slow. Further, it frequently spreads the weed infestation as it drags cut weeds from one part of the lake to another. Finally, the "cut" weeds and algae must still be disposed of —frequently by the truck-load. Labor also is a very costly factor. With practically all mechanical aquatic weed control methods, the cost of efficient control is too expensive for practical use.

Biological methods for controlling aquatic weeds have been popular in concept over recent years. Biological control takes many forms. The primary biological methods of control has been to stimulate the growth of natural weed and algae enemies; stocking these water bodies with plants, fish, or other microorganisms that will attack the undesired vegetation. In our opinion

(continued on page WW)

A COMPLEX ENVIRONMENT : 10 MILLION ACRES OF TURF

A look into



"... you must offer expertise and service."

By GARY JOHNSON
Specialty And Technical Sales
Elanco Products Company

THE United States Department of Agriculture reports that there are 10-million acres of turf in this country. This figure **doesn't** include home lawns. These 10-million acres are industrial turf, apartments and condominiums, hotels and motels, all types of government installations (from office buildings to military posts), Federal and state highway rights-of-way, parks and recreational areas, sod farms, athletic fields, schools and colleges, hospitals, airports, cemeteries, and railroad accesses.

In short, there's a lot of ground surrounding a wide variety of facilities. Some of this turf gets a lot of care, while other turf simply is mowed. Many property owners have their own crews to apply herbicides and do landscaping work. Other owners turn to custom application firms to get the job done. So, there are not only a variety of different types of turf sites; there also is turf where you may not tread.

In general, the custom herbicide application market is in the densely populated areas of the United States, regardless of what part of the country. This excludes, in many cases, the inner city of urban centers. The amount of expendable income—either by the homeowner, businessman, or government—is a major factor in turf care. Income levels often are reflected in the quality of turf.

Now, let's look at the major categories (or market segments) for custom herbicide application. The first category includes golf courses, sod farms, and athletic fields. Many courses have staffs that apply herbicides, mow, and do other chores. However, upcoming state and Federal pesticide applicator certification programs (some states already certify applicators) may make it possible for knowledgeable applicators to take over some golf course work. Athletic fields may be small, but certain schools expect them well cared for. The lifeblood of sod farms obviously is not weeds. The need for exact chemical application is important here, too. Some sod growers have chemicals applied by air; so there is a need for highly specialized equipment here.

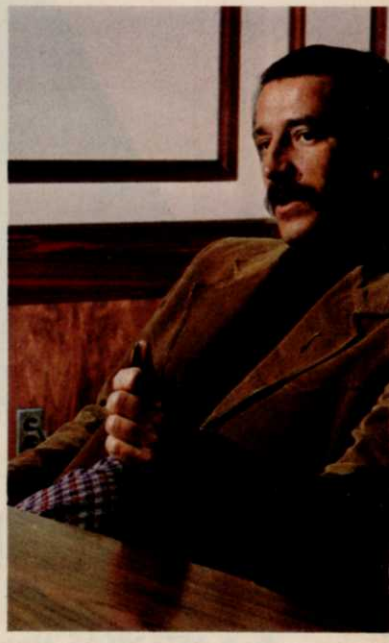
Home lawns are a new area for the custom applicator. New application firms are springing up quickly around the country. These firms are making four or five applications (fertilizer, herbicide, insecticide, and fungicide) annually, so spring is not necessarily the only peak season for the home market. Also in this second category are apartment complexes, condominiums, and industrial firms that are proud of their outward appearance. The latter three also may desire full landscaping services (mowing, pruning, etc.) in addition to herbicide application. Because the acreage is not large for any potential customer in this category, you need a number of customers to maintain a profitable business.

In group three are industries that want a nice—but not great—turf. They've some money to spend, but not a lot.

Opportunity in group four is, perhaps, the most limited. This group includes airports and highway rights-of-way. Airports generally want only to keep weeds away from runway lights and off the edges of runways. Total-kill products are most often used here. Herbicide application on highway rights-of-way is usually done by the government. However, a private applicator pops up every so often. Profits are lowest here, and it's probably the most difficult segment of the market to penetrate.

Not related to the above is total vegetation control (TVC). Railroad

"In short, there's a lot of ground surrounding a wide variety of facilities. . . ."



sites, certain industries, utilities, and highways need this service. However, make certain you want to invest in the special equipment required for this type of custom application.

To be sure, there is a good market for custom herbicide application. However, you must concentrate on the treatable acres. Don't let the 10-million-acre figure mislead you. Probably significantly less than half of this land is ever treated for weed control.

As with most businesses, there are good firms and there are less competent ones. You've probably heard of some outfits that spray with nothing but soapsuds at a charge of $25 or use the wrong chemical for the job. Whether you intend to seek new customers for the custom application business or replace firms now treating turf, you must offer **expertise** and **service.** This knowledge sets you apart from applicators who do not know their business.

Expertise should be a vital part of your operation. You need to know the best time to apply chemicals, weed identification, proper rates for the herbicides you use, and the type of equipment best suited for each job. Knowledge and compliance with Federal and state laws and requirements fit into your expertise.

And, liability coverage is as important for you as it is for any businessman. Herbicides may drift to nearby ornamentals and other desirable plants even under ideal situations. Poor attention to proper rates also can destroy turf and surrounding vegetation. Experts value their reputation and their customer. They have liability coverage.

Doing things the right way must have an advantage. A recent survey by this magazine revealed that 10 percent of the applicators do 60 percent of the dollar volume. Expertise is the key. Your customers want and need to depend on your knowledge.

Your expertise is reflected in the herbicides you use. Are they liquid or granular, or both? Experience has shown that profit potential is about the same for either formulation. This decision and that of market segment are governed by the type of weed control you offer. The types are preemergence, postemergence, selective, or TVC.

This is a good time to mention that a close working relationship with chemical firm representatives and people from chemical dealers is most beneficial. Their knowledge of the market in your area and of their chemical products can help you in making your choice of granular and liquid products and, eventually, equipment to apply them.

Proper equipment is essential. Spray rigs used for home lawns are of little value for golf courses because the acreage is too great. Handgun sprayers are far less accurate than boom sprayers. Booms offer more uniform chemical concentration and reduce the chance of overlapping where two, three, four, and even five-times the normal application accidentally may be made.

If you're treating industrial turf, you probably will need a tank sprayer ranging from a 100- to 500-gallon capacity or a large crop or rotary spreader. Because of the rough terrain around many utility sites, a four-wheel-drive vehicle is best. You also may be applying other chemicals, such as fungicides and insecticides. It is necessary, then, to purchase equipment suitable for applying different types of chemicals.

Your customers' acreages can guide your equipment decisions. Many applicators design their own rigs or modify commercial equip-

(continued on page ZZ)

The Herbicide Market

HIGHWAY WEEDS

By A. PETE NICAS, Manager
Industrial Herbicide Sales
Agricultural Division
Ciba-Geigy Corporation

IT IS ESTIMATED that 25 percent of all herbicides sold in the U.S. for non-agricultural uses are utilized in highway and roadway programs. Contact and selective herbicides are applied to more actual acres than residual or soil-active herbicides. However, the latter group of herbicides which are used for bare ground applications equals the market value of contact and selective herbicides combined.

Selective vegetation control involves general or spot application of herbicides on roadsides for brush, broadleaf weed and noxious weed control. These treatments provide the following benefits: (1) Improved visibility for drivers; (2) Removal of vegetation that is detrimental to crop lands, livestock and humans; (3) Acceptable levels of desirable grassy vegetation along with protection from wind and water erosion; (4) Improvement of aesthetic values.

Residual or soil active herbicides yield bare ground around shrubs, trees, shoulders, guard rails, pavement cracks, sign posts and delineators. With the exception of erosion control, residual herbicides provide the same benefits as selective herbicides. They are also used to prevent vegetation from destroying paved surfaces.

Compared to mechanical or hand methods of vegetation control, proper use of herbicides generates significant cost savings and provides more effective control of vegetation in most situations.

There is a general increase in the use of residual herbicides on highways. And the trend is expected to continue for the following reasons: (1) Rising labor and machinery costs; (2) Fuel shortages and/or rising fuel costs are expected to generate even more interest in chemical vegetation control as a replacement for mechanical methods; (3) More interest in highway beautification; (4) Increased interest in landscaping with ornamentals and ground cover will continue to increase the need for weed control to insure aesthetics and survival of desirable species; (5) Development of new products; (6) Increased manufacturer and highway department knowledge in the areas of product and application technology.

Most highway herbicide applications are made by the maintenance departments of the various highway departments. Biggest exception is in the Midwest where numerous counties and a few states contract all or part of their application work. Custom applicators, weed control specialists and tree maintenance companies share in the contracted market which is estimated to account for less than a fourth of the national expenditure for herbicides used on highways and roads.

For the independent applicator it appears that the best way to break into the highway market may be to approach a county or township highway department that is not doing any highway weed control. In other words, go to someone who hasn't done it before and explain what you can do.

Ed Edwards, owner-operator of Edward's Spraying and Construction, Clear Lake, Iowa started doing that 26 years ago. His first contract was with the highway department of Polk County (Des Moines area), Iowa. Since then his business has grown to where Edwards services more than 40 Iowa and Minnesota counties.

"I first saw the need for this type of service about 30 years ago," Edwards recalls. "County highway crews were doing the brush and weed control as well as all their other maintenance work. Road repair and maintenance demands were usually heavy in early spring — the time when weed control applications should be made. Often they got caught short of time and it was difficult for them to get applications made at the optimum time for control."

After touring several states to learn what others were doing in industrial and roadside weed control, he developed a program and presented it to the county highway department.

"We emphasize application," Edwards says. "That's our specialty. There are a lot of good products available to fit any particular need — Pramitol, for example, is good for right-of-ways where no vegetation is wanted."

Beyond the business expansion potential offered to horticultural and industrial contractors, highway work offers opportunities for agricultural applicators, These applicators already have much of the equipment and knowhow required, and some firms are finding highway work a good way to utilize idle equipment and personnel during part of the off-season. One such firm is Auburn Fertilizer and Chemical, Auburn, Illinois.

"Usually by the time bids have to

be placed for state jobs — March-April — we have an idea how much time we'll be tied up with fertilizer application," says Joe Powell, applicator. "If fall weather allowed completion of most of it, we try to get some highway weed and brush control work. It offers good margins and a chance to utilize idle equipment and labor."

Based on our experience in highway weed control we estimate that per mile herbicide expenditures range from as little as $2 to as much as $21. Selective herbicides find widespread geographic usage while the larger use of sterilents and contact herbicides is found mainly in the south where bermuda and johnsongrass are serious problems.

Ciba-Geigy herbicides are used extensively for highway weed control. Because of their broad control spectrum and universal geographic adaptation, their popularity continues to increase.

Pramitol is used primarily for controlling hard to get perennial broadleaf weeds and grasses. This product in combination with Princep provides control of both deep-rooted perennials and late-germinating broadleaf weeds and grasses. A new use for Pramitol 25E that is growing rapidly is in combination with asphalt cutbacks to prevent degradation by weed breakthrough after they are applied on shoulders, on cracked asphalt surfaces, country roads and under highway fences and guard rails. This treatment extends the life of the new surface resulting in considerable savings in time and labor.

Princep is a broad spectrum herbicide that is particularly effective in controlling shallow-rooted annual weeds. An additional asset is its safety to desirable trees, shrubs and some ground covers. Princep is used extensively for weed control around ornamental plantings and in highway spray programs where safety to deciduous fruit and nut trees and/or citrus is an important consideration.

AAtrex and Atratol (AAtrex plus Pramitol) are also used for highway weed control, especially in the Pacific Northwest.

Private applicators have the tools and knowledge to tap this large potential market. They have the skills necessary to meet the growing and increasingly specialized demands of highway work and the modern herbicides to fit virtually any job requirement. With the added benefit of being able to keep expensive equipment working more of the time, highway weed control appears to be an area the applicator should investigate as a means of expanding his business. □

AQUATIC WEEDS

(from page SS)

biological controls have simply not been proven effective. They may create a different nuisance than the one they were employed to control, and in turn, require additional control measures.

Chemical herbicides have proven the most practical. Comparatively, they provide low-cost aquatic weed control with minimum labor. The algae and aquatic weeds are killed and decompose, eliminating the need for physical removal to another site, or the need for additional control measures. In many cases, they are the only means of economic control —for example, in a dry, hot western summer where continued irrigation is mandatory for healthy crops.

There are a variety of aquatic herbicides available produced by various companies including Chevron, Dow, Pennwalt, Shell and 3-M. Some of these companies offer aquatic herbicides with several variations effective on nearly all aquatic weeds and algae found in water environs.

Perhaps it is prudent, at this time, to point out that there are aquatic weed control chemicals—and chemicals that kill water weeds, algae and other vegtation also. Water is a lifesource of the human—yet, all too frequently, chemicals known to have toxic residues on fish and/or humans are used against water weeds and algae.

Sometimes these chemicals are also effective against other useful vegetation—and have been known to kill valuable economic crops many miles "down-stream" from the point of application. The EPA (Environmental Protection Agency) and many states have laws or controls applicable for use of herbicides in such water bodies. In many states, application of aquatic weed and algae control chemicals may only be applied by licensed applicators. In others, permits must be obtained. In still others, no legislation exists. And, of course, there exist various combinations of the requirements. Most professional herbicide applicators are aware of such laws in their states — but it is always wise to check.

The season for aquatic weed control exists from thre months to year-round — depending on geographic region and the nature of the market. Summer weed control is particularly prominent in areas of the country where lakes and ponds are frozen throughout thre winter.

Conversely, it is this winter season that represents one of the best selling opportunities—since it provides the opportunity to "pre-sell" aquatic weed control . . . making it possible for the professional applicator to book jobs in advance and plan ahead to the busy months. It also makes control easier, since aquatic weeds are best controlled during their early growth periods.

There is a strong trend in aquatic weed control toward greater professionalism. Fewer and fewer applicators are working job by job — but instead, are providing year-round complete aquatic vegetation control management on contract. Further, it remains one of the few rapidly growing markets in the agricultural and/or herbicidal chemical application market.

Many applicators already have on hand the necessary equipment to enter the chemical segment of aquatic weed control. Practically all of the aquatic chemicals come in liquid, granular or pellet formulations. The few powder formulations on the market are generally tank-mixed with other liquid formulations before application.

For the professional applicator, probably the most common equipment is the boat combination. Judging investment is still difficult because of the wide variation in boats, motors, pumps, etc. However, an estimate in round figures for a set-up that could handle most sizable jobs would include:

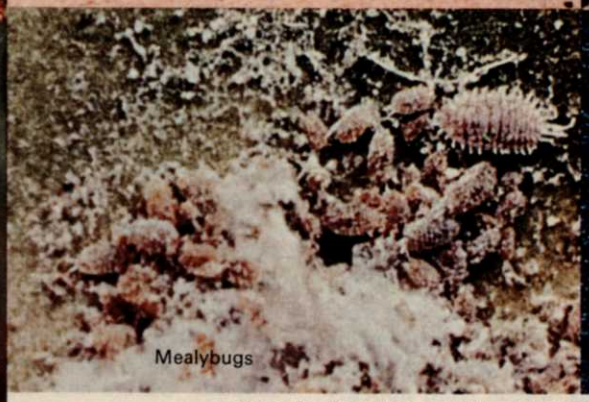
Boat—16 ft.	Approx.	$ 300.00
Motor—9.5 h.p.	Approx.	350.00
Trailer	Approx.	250.00
Pump and fittings	Approx.	250.00
Miscellaneous equipment Safety goggles, gloves, oars, tools, etc.	Approx.	150.00
	TOTAL	$1,300.00

Obviously, these figures would vary throughout the country. They would also vary depending on the "newness" of the equipment and the amount of equipment already on-hand. And, finally, they would vary depending on the market intended.

(continued on page ZZ)

1974 will be a bad year for bugs.

Bad for bugs of turf and ornamental plants. And bad for household and structural bugs. Because Dow has a pair of insecticides that will make their lives miserable. There's ZECTRAN* insecticide, a general use biodegradable insect killer that works on almost all major foliage-feeding insect pests—even the hard-to-kill kinds. Use ZECTRAN on over 600 different flowers, ground covers, trees, shrubs and turf. And then there's DURSBAN* insecticide. Its effectiveness, economy, non-phytotoxicity and biodegradability make it the choice of professional turf men for golf greens, turf farms, home and



Ag-Organics Department, Midland, Michigan 48640

industrial lawns—or wherever grass and ornamentals are grown. It's especially effective to control the hairy chinch bug and sod webworm. DURSBAN insecticide is also preferred by PCO's for controlling household and structural pests—especially resistant roaches that laugh at other sprays. Please remember to read and observe all precautions on the product label. Bugs, get ready for 1974!

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For More Details Circle (136) on Reply Card

COMPLEX ENVIRONMENT

(from page UU)

ment to meet specific needs.

Selling the concept of weed control may not be an easy thing to do. Aesthetics is still the major reason for controlling grassy and broadleaf weeds in most fine turf. They just don't look pretty. Economics also enters the picture.

Desirable grasses revert to a relatively dormant state during the hot summer months. Weeds don't. They flourish. The result is that weeds are about all that is mowed in non-irrigated turf during the hot months. One or two effective herbicide applications should save your customer money by eliminating additional mowing costs created by weeds.

Economics of another sort enters the golf course market. People generally prefer to play their game on a well-kept course. Weeds could send players to other courses, reducing revenues for the weedy course.

Tall weeds that dry out in late summer present a fire hazard and also do a good job of serving as hiding places for rats and other undesirable varmints. Weeds also produce pollens—a cause of allergies. Weedy vacant lots in cities create eyesores. So, as you can see, there are a number of good reasons for controlling weeds.

Another factor to consider is the application of herbicides in the fall. Traditionally, about 80 percent of the work usually has been done in the spring. This concentrates your activities into a relatively short period. This time span can be further reduced (and often is) by rain, which can make it impossible for application equipment to get onto the turf. This, in turn, can stretch your capabilities and prevent you from taking on new customers.

Today, however, there is a trend away from application solely in the spring. Many universities are recommending fall application of herbicides to control and prevent broadleaf and grassy weeds from appearing next spring. This not only gives your business more flexibility but also gives you the opportunity to apply chemicals during the fall when weather conditions are usually more favorable. Chemical drift is less of a problem in the fall because most vegetables, flowers, and other annual plants have completed their growing cycles.

The fall also is the best time to seek new business. It's usually the time when those responsible for turf care are planning their budgets for the following year. Once a potential customer has committed money for the year, you probably will not be able to get any of his business. By contacting him early you have a good opportunity to work your program into his future plans.

AQUATIC WEEDS

(from page WW)

For example, if you intended to work exclusively in the golf-course segment of the industry, you might not need a boat at all—or a small skiff would easily suffice. At the other extreme, if your entire market were irrigation and flood canals, an air-powered hydroplane skimmer with booms or sunken drag hoses will probably be necessary.

Interestingly, it generally doesn't take a lot to pay off the initial investment and begin to recognize valid profits. Using the outfit above, lets take a typical example.

Generally, lakes are not treated across the entire surface. This is because aquatic weeds in deeper segments of the lake are not bothersome and/or simply do not get sufficient sunlight to grow. On a small 10 acre job along the shoreline of a lake, treatment would usually average out to about four feet deep. Thus, an applicator would be treating 40 acre feet.

The chemical to be used would vary depending on the treatment necessary and the type of aquatic weed to be controlled. In Michigan, for example, Aquathol Plus will usually do the job at 3 ppm (parts per million). Three ppm is equal to 66-⅔ galons for the job. To make it easier to figure and provide a bit of a safety factor, lets use 70 gallons.

The chemical cost to the professional applicator for Aquathol Plus was $10.90 in 1973—or 763.00 for 70 gallons. Many applicators, on a job of this size, just double the chemical cost and charge the customer that amount. Others sell the chemical at the retail price and add on an application charge. The application fee may vary depending on the size, distance traveled, location and difficulty of the job.

For this job, let's use the second method. Seventy gallons at a retail price of $13.00/gallon equals $910.00. If an application fee of $10.00 per acre foot is used (total = $400), then the total bill to the customer equals $1,310.00. The applicator has a dollar profit of $547.00. As you can see, it does not take too much time to write-off an initial investment. The professional's key is balancing his investment to the potential market in his area; or to the market he seeks to penetrate.

Just exactly what is the job? Well, the first element is to identify the market or markets. Beyond that, there are essentially six steps.

1. Meet with your customer and discuss their particular needs. Does he want to fish, swim, boat or waterski—or is his an industrial requirement such as irrigation or flood control; or purely asehetic. Different chemicals do different jobs.

2. Survey the area to be treated to obtain information concerning the aquatic vegetation, water quality and storage capacity. Identification of the specific water weeds and/or algae is paramount to successful control—and there are well over 25 different varieties (generally easily identifiable from state manuals or chemical supplier technical information sheets).

3. Select the proper materials to do the most effective job, consistent with state and federal environmental protection laws. I reemphasize the state laws because they vary widely from state to state even in similar geographical regions.

4. Offer your customer your contract and clearly outline what he will receive, and what payment schedule will be made. Some applicators provide "easy payment" schedules of 50% down and the remainder in 30 days—or in two payments of 30 and 60 days. Most year-round management contracts guarantee a specific performance or control ratio.

5. Apply the herbicide. Obviously, the length of time required to apply the herbicide varies widely with the type of application and the type of equipment. With boat or mechanical spreaders the average is probably between 5 and 10 acres per hour.

6. Inspect the treated area periodically to determine if adequate weed control has been achieved.

For the professional applicator, penetrating the aquatic weeds market may prove a very satisfactory and financially rewarding opportunity . . . or it may not be "your cup of tea."

At Pennwalt Corporation we have a large number of technical sales representatives that specialize in the aquatic weed control market. These people are experienced and helpful and willing to assist in the investigation of aquatic markets and business development.□

For More Details On Following Page Circle (116) On Reply Card ▶

We Know Agrico 18-5-9 Can Improve Your Fairways. And We'll Go To Any Links To Prove It!

We know Agrico Country Club Fertilizer can improve fairways. Because it feeds more efficiently to help build plusher turf—turf that will approach your greens in quality.

We'll prove it to you on your own course, free of charge.

Formulated with moderate-size granules, Agrico 18-5-9 can be spin-spread faster and more accurately. Once spread, 18-5-9's power-feeding formula makes your fairway turf uniformly thicker. This helps "keep the ball high on every lie" and gives your golfers better fairway shots.

And because 18-5-9 is high in nitrogen content, you need fewer bags for normal fertilization. A real savings when you've got 40 to 65 acres of fairways.

The nitrogen is derived from organic as well as quick green-up sources. Five units of nitrogen are in water insoluble form to keep your turf greener—longer.

Higher potash content, one-third from sulphate, makes turf so resilient that it resists tracking—even under heavy traffic conditions. Five units of phosphorus will maintain, but not increase soil levels.

Agrico®
Country Club
A Good Name To Grow By

"We'll Go To Any Links"

To prove that Agrico can improve your fairways, we'll go to any links. Complete the coupon below and we'll come to you with a free product demonstration. We'll prove beyond a doubt the effectiveness of Agrico's 18-5-9 formula for fairways. And we'll fill you in on Agrico's full line of dependable course-care products.

Agrico Country Club w2b
P.O. Box 317
Lebanon, Pennsylvania 17042

Please contact me for a free product demonstration of 18-4-10 and 18-5-9 and for information on Agrico's other course-care products.

Name _____

Title _____ Golf Course _____

Street or P.O. Box _____

Phone Number _____

City _____ State _____ Zip _____

Offer good only in Agrico trade areas.

This entire area was seeded with bluegrass and crabgrass. The left-hand side was sprayed with TUPERSAN the same day it was seeded. Note crabgrass on the right (untreated area) and the absence of crabgrass in the treated area.

The same areas thirty days after seeding and treating. TUPERSAN made the difference. Note crabgrass growth in the untreated area at right and how TUPERSAN controlled crabgrass in the treated area at the left.

Tupersan® crabgrass killer permits seeding & treating the same day (COOL-SEASON GRASSES)

Siduron Weed Killer

Du Pont TUPERSAN is a unique, highly selective, pre-emergence weed killer for the control of crabgrass (smooth and hairy) and certain other annual weed grasses in turf. TUPERSAN offers a high degree of safety to turf. It can be used on newly seeded areas without causing injury to germinating seeds of cool-season grasses. It can also be used safely on established turf.

You can seed and treat the same day with TUPERSAN. It prevents crabgrass—but lets the desirable grass grow. For full information on TUPERSAN, consult your golf course supplier—your service agency.

With any chemical, follow labeling instructions and warnings carefully.

DU PONT

REG. U.S. PAT. OFF.

For More Details Circle (129) on Reply Card

Sprinkler Irrigation Conference Held In Denver

Opening with a special session on the energy situation and its implications to the sprinkler irrigation industry, the Sprinkler Irrigation Technical Conference was held in Denver, Colorado on February 24-26, 1974. Site was the new Regency Hotel.

Special sessions were devoted to financing of sprinkler irrigation systems and a panel on drip irrigation. Two general sessions of the conference presented a broad range of subject matter of interest to those in the field of turf and agricultural irrigation.

Registrants heard twenty speakers from all areas of the country—the most representative group to ever appear before the annual meeting which was sponsored by the Sprinkler Irrigation Association.

Other activities for the conference included the winter meetings of the SIA board of directors, the annual breakfast meeting of SIA committees and the association's annual banquet. A special meeting of the Association was held to vote on a series of amendments proposed to the organization's By-Laws.

North / South Transition Zone Ready For Bermudagrass

Bermudagrass adapted to lawns in the "transition zone" between South and North could be only a few years away.

John Dunn, University of Missouri-Columbia turf researcher, said several Missouri and Kansas selections "look promising" and could be made available to homeowners in about 5 years. In fact, two winterhardy varieties have been released by Kansas State University and are in limited use on lawns and golf courses.

Dunn, who calls the "transition zone" (like central Missouri or Kansas) "the toughest place in the country to grow a good lawn," said research to find winterhardy bermudagrass for this area might be a better idea than trying to develop summer tolerant bluegrass.

Improved bluegrasses have been developed, he said, but they need to be well irrigated in summer to stay green. "Besides," Dunn added, "serious disease problems may occur on bluegrasses in summer.

"Bermudagrass will tolerate our hot summers and stay green until the first heavy frost. We are looking for more hardy varieties that can survive our harsh winters."

Dunn and others have been looking "inside" grasses in hopes of getting some cold-hardy "indicators."

They compared three burmudagrasses and Meyer zoyzia. (Zoyzias used in the Midwest are generally more cold-hardy than bermudagrass.)

They found that the carbohydrate content, mostly in the form of starch, was 2 to 3 times higher in zoysia than in bermuda during the cold-hardening period of early fall into winter.

Among the bermudagrasses, Dunn found little difference in carbohydrate levels even with differences in cold-hardiness.

He noted, however, that most carbohydrate storage of bermudagrass during fall and winter is in the stolons while storage in zoyzias is equally divided between the stolons and rhizomes.

"One of the resistant bermudagrasses has more stolons and rhizomes which might give it an advantage over other bermudas of equal, inherent hardiness," said Dunn. "Since it has more of these, it has more possibilities of nodes surviving for regrowth.

Announcing the new Asplundh "Whisper Chipper"

Looks the same—sounds so different!

This new unit has all the dependable features of our famous chipper line. However, there is a remarkable difference — a great reduction in noise. Modification kits will be available for many existing models. **Asplundh Chipper Company, a division of Asplundh Tree Expert Co., 50 E. Hamilton Street, Chalfont, Pa. 18914**

ASPLUNDH

For More Details Circle (132) on Reply Card

This Spring...Rebuild and Recondition Your Soil ...Apply SOIL REBUILDER

Created to let Mother Nature rebuild her soil naturally, Soil Rebuilder releases the pressure of compacted, tight soils so as to allow roots to grow deeper. Soil Rebuilder encourages grass to grow in thick and natural into bare and thin areas. SOIL REBUILDER HELPS TO DEVELOP DEEP STRONG ROOTS.

Composed of a natural combination of plant bi-products, decomposition bi-products, organic extracts, bacterial bi-products and many organic complexes found in highly productive organic soils, Soil Rebuilder recharges worn-out soil with life.

When sprayed, Soil Rebuilder loosens compact soil and allows air, water and nutrients to penetrate deeply into the root systems of grasses and ornamentals. Working its way downward with the natural nutrients, Soil Rebuilder coats soil particles with organic matter and helps develop soil aggregates. Plant roots grow deeper and stronger; plants thrive. More beautiful and more healthy because of Agro-Chem Soil Rebuilder . . . and a little help from Mother Nature.

A Naturally Popular Product Mover

Guaranteed to be a pure, productive product, Soil Rebuilder produces dramatic, natural results.
Completely non-toxic and safe to use on all soils, Soil Rebuilder is harmless to humans, pets and wild-life. Soil Rebuilder rebuilds worn-out soils and improves good soils.
Naturally improving the soil, the need for extensive watering, fertilizing and weed control is lessened. Maintenance costs reduced.
Try it on your ground this year. Notice the improved results within a few weeks—as water and nutrients penetrate and help fertilizer work better.

By Agro.Chem, Naturally

No other product can produce such dramatic, natural results as no other product is produced in such a natural manner. Reducing labor time and expense, Soil Rebuilder is vital to all management programs. Agro.Chem Soil Rebuilder and all Agro.Chem products always produce positive results . . . with a little help from Mother Nature.

Distributorships Available

AGRO·CHEM, INC.

Be certain to ask for Agro-Chem's Ground Care Catalog or circle number on reply card.

P.O. Box 59225, Chicago, Illinois 60659 • 312/673-7500

meeting dates

Northeast Ohio Commercial and Public Pesticide School, Sheraton Motor Inn, Beachwood, Ohio, Feb. 21.

International Erosion Control Association Conference, Sacramento Inn, Sacramento, Calif., Feb. 21-23.

Williamsburg Garden Symposium, in association with the American Horticultural Society, Williamsburg, Va., Mar. 31-Apr. 5.

Maryland Sod Conference, 9th annual, Center of Adult Education, University of Maryland, College Park, Md., Mar. 7.

Southern Turfgrass Conference and Equipment Show, Holiday Inn Rivermont, Memphis, Tenn., Mar. 3-5.

Cornell Turfgrass Conference, 27th annual Statler Inn, Cornell University, Ithaca, N.Y., Feb. 27-28.

Clemson University Turfgrass Field Day, 1st annual, Turfgrass Research Area, Dalton Farm, Pendleton, S.C., Mar. 26.

Southern Connecticut Grounds Keepers Ass'n., Grounds annual meeting, Downtown Holiday Inn, Tampa, Fla., Mar. 3-6.

Professional Turf and Plant Conference, 6th annual, Salisbury Club, East Meadow, L. I., New York, Mar. 5.

Sixth Vertebrate Pest Conference, Royal Inn, Anaheim, Calif., Mar. 5-7.

Southern Connecticut Grounds Keepers Ass'n., Grounds Maintenance Conference, for nurserymen, landscapers, garden center operators, Waverly Inn, Cheshire, Conn., Mar. 6.

Western Society of Weed Science, annual meeting, Royal Lahaina Hotel, Kaanapali, Maui, Hawaii, Mar. 11-14.

Canada Chapter, International Shade Tree Conference, annual meeting, International Inn, Winnipeg, Manitoba, Canada, Apr. 3-5.

Southern California Turfgrass and Landscape Horticulture Institute, annual session, Royal Inn, Anaheim, Calif., April 23-24.

Western Chapter, International Shade Tree Conference, annual meeting, Del Monte Hyatt House, Monterey, Calif., May 19-22.

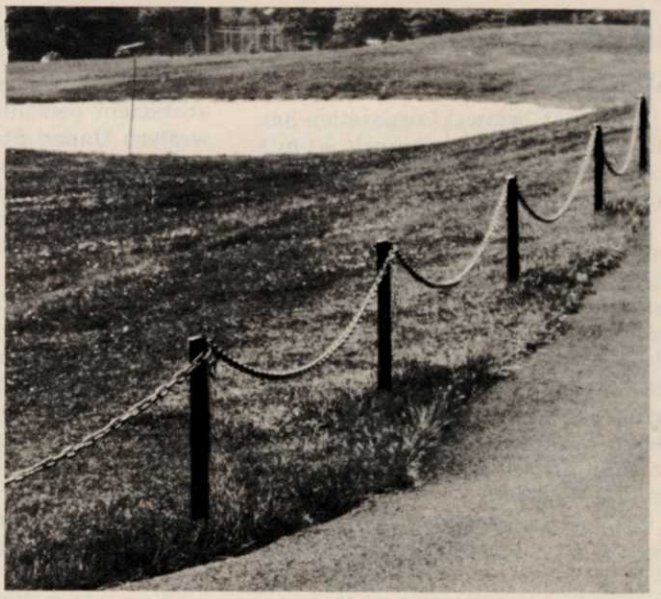
Florida Nurserymen and Growers Association, annual convention, Dutch Inn, Lake Buena Vista, Fla., May 23-25.

American Association of Nurserymen, annual convention, Four Seasons-Sheraton Hotel, Toronto, Ont., July 13-17.

Central Plains Turfgrass Conference, K-State Union, Kansas State University, Manhattan, Kan., Oct. 23-25.

CENTER-MOUNTED ROTARY: Gravely, Clemmons, North Carolina

Here's a 50 inch center mount rotary mower and a 16½ HP tractor that make a combination that's hard to beat. It's the same tractor that made the torture test, mowing from Washington, D. C. to New York City in 12 days. Transmission on this powerhouse allows a choice of eight ground speeds. Another advantage is constant attachment speed. It permits operator to match ground speed with the job at hand. For more details, circle (701) on the reply card.

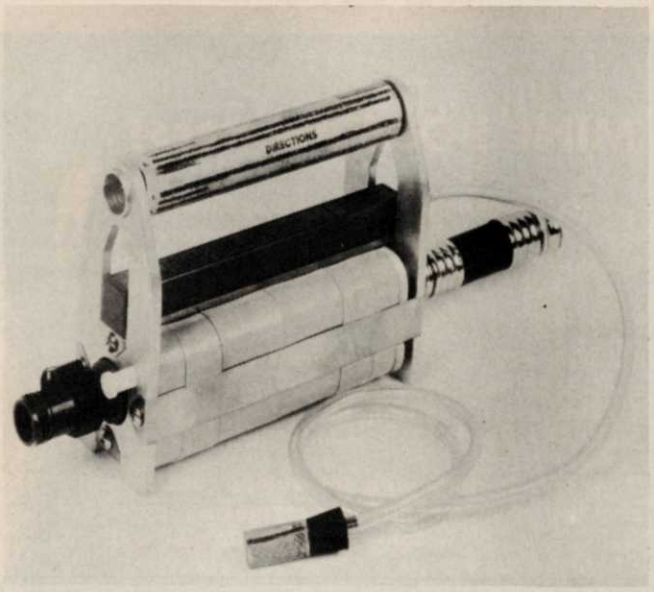


POLY-X CHAIN: Mercury Products Corporation, Providence, R.I.

Need a personnel barricade or barrier? A warning of a hazard? Use this colorful and decorative as well as durable polyethylene chain. It's available in several sizes and colors. Requires little or no maintenance and it is available in strengths up to 1200 lbs. of force. Also available are posts and cones on which chain is attached. Ideal for the golf superintendent or the parks and grounds manager. For more details, circle (702) on the reply card.

HYDROGRASSER: Reinco, Inc., Plainfield, N.J.

Model HG-25 is a low profile, 2500 gallon unit that can seed and fertilize five acres in one operation. Built for the large acreage user, this machine doesn't employ any belts, cables, pulleys or special drives. Fewer moving parts virtually eliminate down time. It can be chassis mounted and has a directional spray turret boom. The recirculating jet agitation insures continuous, uniform, no-clog solids dispersion. For more details, circle (703) on the reply card.



HYDROCARE POWER SPRAYER: Agro Chem, Inc., Chicago, Ill.

This small but powerful unit does the job of sprayers much larger in size. It attaches quickly to a standard water spigot. Here's how it works: Water flowing through the injection applicator activates four pistons which accurately inject liquid concentrate chemicals into the water stream at the ratio of one part concentrate to 24 parts water. Works positively on water pressures from 20 to 80 psi and flow rates from 1/10 to 7½ gpm. For more details, circle (704) on the reply card.

AMVAC Chemical Corp. Plans Attack On Aquatic Weeds

AMVAC Chemical Corporation has announced plans to launch a full scale offensive against weeds, algae and other aquatic pests.

Of growing concern to everyone from EPA to sportsmen's groups is the condition of much of the water in the United States. Many bodies of water are choked with weeds and algae as a result of natural aging or other outside influences. While these aging processes are difficult to reverse, whether from natural causes or from other factors, symptomatic relief is available.

One of the reasons that persons owning or controlling water find it difficult to obtain information on this subject is that most of the materials available for this use have been offshoots of research in other areas, says the corporation. Another reason for the lack of readily available information has been the lack of trained personnel at the distributor level. Only a handful of such specialists exist, and a competent staff is difficult to assemble.

Justin Fuelleman, technical director for the organization, brings years of experience in weed abatement and aquatic pest control to the firm. Jack Prieur, as sales manager, is well known to public health and mosquito abatement personnel throughout the western United States. With the recent addition of Richard Zuccarini as a full time aquatic specialist, the firm becomes one of the first organizations in the west to create such a department.

Plans are to offer materials and recommendations for total aquatic habitat management as the situation dictates. "We feel that ill considered use of materials creates problems greater than those that already exist," says Justin R. Fuelleman. "No responsible Pest Control Advisor advocates unplanned and indescriminate use of any agricultural chemical."

"We try to make recommendations which make maximum use of available natural controls and require a minimum of outside influence. This is not only the least expensive way," says Richard Zuccarini, "but it gives the longest lasting results.

"We cannot expect to have clear water all year around without expending considerable effort. As the season progresses, it is natural for most bodies of water to become chocked with weeds, algae and other matter. In the fall, with changing seasons, this dies back, decays, and as a result, fish and other aquatic creatures die. This is the natural system of checks and balances. Eventually all lakes grow old and die. The older they are physically, the greater the effort to keep them alive and safe for humans and animal life.

"In the end, it comes down to dollars and cents. We can devote a considerable amount of time and effort to a project, but we have to pay for materials. If we cannot find enough concerned people to raise the capital, neither we nor anyone else can begin."

Stanley Hydraulics Is New Ackley Name

Ackley Manufacturing Co., Clackamas, Oregon, subsidiary of The Stanley Works, has recently undergone a name change. The new name will be Stanley Hydraulic Tools, Division of The Stanley Works.

No other changes in company management or policy will occur, said Robert J. Lytle, president, Stanley Hydraulic Tools.

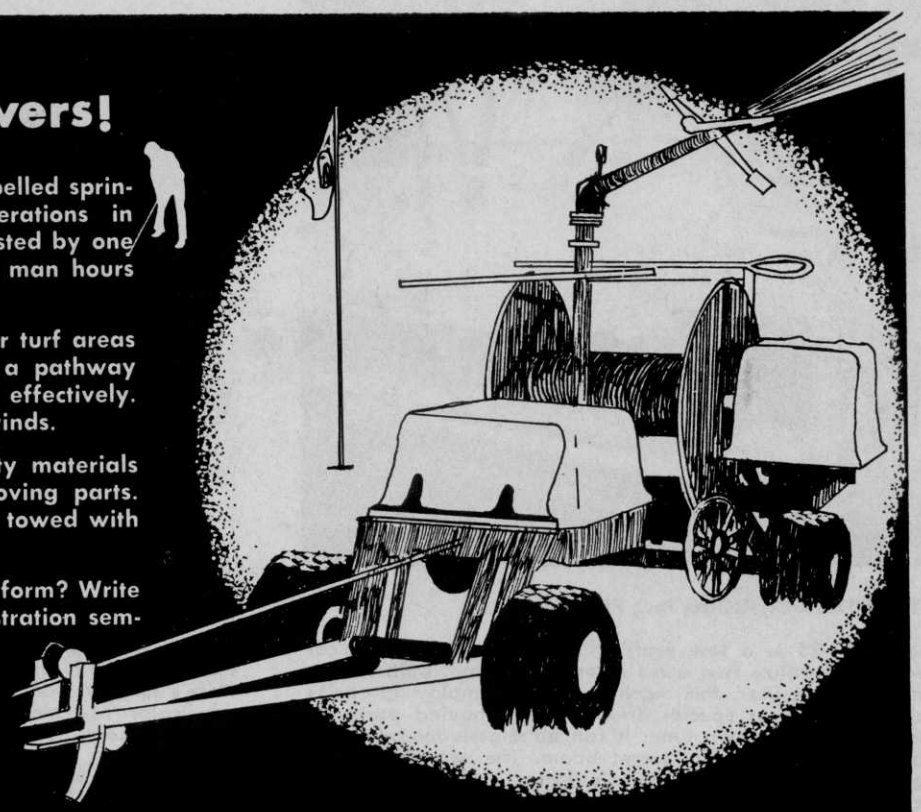
MINI BOSS delivers!

Because we designed this self-propelled sprinkler with smaller irrigation operations in mind, settings may be easily adjusted by one man. And, Mini Boss requires no man hours on the trip!

It's perfect for odd-shaped grass or turf areas and rough terrain, because only a pathway is needed for this unit to water effectively. Also, may be set for prevailing winds.

Mini Boss is built with top-quality materials and the minimum number of moving parts. Sturdy, yet lightweight, it may be towed with a light service vehicle.

Want to see this Mini machine perform? Write for details about our free demonstration seminar and specifications:



Boss Irrigation
Consolidated Pipe & Tubing
P.O. Box 191
San Angelo, Texas 76901

or call collect: 915/655-5446

For More Details Circle (146) on Reply Card

Green Is For GO

Editor's Note: Louis L. Goldstein is the comptroller of the State of Maryland. In his work he regularly deals with reports on the state's economy. He was the guest speaker at the recent meeting of the Maryland Turfgrass Council. Although his remarks are directed to this group, we present them because they have meaning to all sod producers.

THERE was a book written some years ago which revolved around the fictitious story that all of the grass in the world had died except for one remaining green patch in England. The story highlighted the importance of grass through the description of the savagery and selfishness of the few remaining persons fighting for their very lives over the possession of this last green acre.

Without grass, there would be no meat nor other food crops. Without grass, our supply of oxygen would be dangerously depleted. Every acre of healthy grass produces much life supporting oxygen. Without grass, soil erosion would engulf us all. Land without grass would indeed be a "Never-Never Land". Turfgrass and its production, is, thank God, your basic interest and consideration.

A chart in one of your recent newsletters caught my attention. It showed a breakdown of the various uses of turfgrass in the state (Maryland). The $4.1 million expenditure for maintaining the sod being produced is a drop in the bucket when compared to the total effect on the economy derived from harvesting, transporting, and installing this product to the ultimate consumer site. (Table 1, pg. 66)

The many uses of turfgrass right here in Maryland make up an impressive list. But the uses for your product — turfgrass — and for other varieties of grass that I am sure many of you will be producing in the future, will continue to grow. Grass will undoubtedly be widely

Louis L. Goldstein, the author of this article, is comptroller for the State of Maryland. He is shown here (1) along with Dr. John R. Hall, U of Md. turf specialist, and Emory Patton, vice president of the Maryland Turfgrass Council.

The great dwarf Bluegrass that stands below the rest.

- DEVELOPED IN ALASKA
- LOW CUTTING HEIGHT
- SHADE TOLERANT
- DEEP GREEN COLOR
- HIGHEST ROOT STRENGTH (A HARVESTER MUST)
- HIGHLY WINTER HARDY
- RESISTANCE TO ALL MAJOR TURF DISEASES

DEMAND CERTIFIED NUGGET —DIRECT PROGENY OF ALASKAN SEED

Nugget

Kentucky Bluegrass

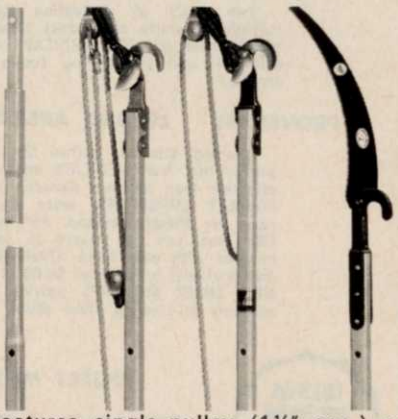
Stock available.
Call collect for your nearest distributor.

PICKSEED WEST, INC.
Box 888, Tangent, Ore. 97389
Tel. 503/926-8886

For More Details Circle (164) on Reply Card

BARTLETT

Tree Trimmer with Fiberglass Handle



Features single-pulley (1¼" cap.) or double-pulley (1½" cap.) tree trimmer head section, and square-end mount pole saw head section with 4 ft., 6 ft. or 8 ft. extension sections with built-in, ALL-FIBERGLASS CONNECTING SLEEVE, and polypropylene rope.

Catalog free on request.

BARTLETT MANUFACTURING CO.
3009 E. Grand Blvd.
Detroit, Mich. 48202
Phone (Area 313) 873-7300

For More Details Circle (168) on Reply Card

Table 1. Estimated Expenditure in 1971 for maintaining turfgrass in the State of Maryland.

Area	Acres	Annual Maintenance Production Costs
Sod	13,000	$ 4,100,000
Golf Courses	13,240	8,570,000
Lawns - Maintenance	140,000	42,200,000
Lawns - Established	5,089	12,724,000
Federal Installations	21,900	2,250,000
Schools & Colleges	16,700	1,714,000
Recreation Areas	16,800	1,645,000
Churches	2,600	266,200
Airports	1,200	123,200
Highways (State Roads)	20,000	1,500,000
Cemeteries	N/A	4,800,000
Total	249,729	$79,892,400

used purely as what I call an environmental crop. A Crop whose basic use is for the maintenance and improvement of our vital environmental well-being.

The average cost paid in 1971 to cut, load, deliver and install an acre of sod in Maryland was $3,279. Couple this figure with the estimated 13,000 acres of sod grown in Maryland and it is quite possible that the gross product of the State of Maryland could be increased by some 42 million dollars just by virtue of the installation of the sod crop.

Already we are moving in that direction. Building developers are turning more and more to the establishment and preservation of green havens within their community planning . . . highway builders are realizing the physical and environmental necessity for providing green medium strips.

Cities are including a grassy green oasis within their urban development programs. Everywhere you look, the word is green . . . The color symbol for go — for life itself.

The word grass comes up in our conversation a thousand times a day — once again underscoring the importance of your product, "a great crop." We say "That the grass is greener on the other side of the fence," when we dream of improving our lot in life. We speak of "the grass roots" of our American way of life, and we even sing of "The Green, Green Grass of Home."

But the time for sentiment alone is over. Like so many other things within the scope of our American way of life, that have been habitually taken for granted, the greening of America can no longer be left to chance. Wild grass is fast becoming extinct. Nowadays, the key word is cultivation and you of the council membership are doing an excellent job of keeping up with the technical problems of producing the best strains of healthy grass for a multitude of turf uses.

The production of tailor-made grass for a specific use is one of the great wonders of this age of technology. As you well know, golf courses require a different, tougher type of grass than say, a median strip of highway. Climatic conditions, usage, and many other considerations go into the development of your products.

Now is the time to take a down to

(continued on page 72)

TREE SYSTEMS Med-i-caps® SYSTEMIC TRUNK INJECTION

for fast-effective treatment of iron chlorosis

★ **TESTED BY LEADING UNIVERSITIES**

Two years of evaluating MEDICAPS by leading university researchers have shown the effectiveness of IRON MEDICAPS in correcting chlorosis, and the lasting control that they provide.

★ **PROVEN BY LEADNG ARBORISTS**

Leading arborists across the country have proven that Iron MEDICAPS are not only more effective than previous chlorosis remedies—BUT EQUALLY IMPORTANT, labor and application costs are sharply reduced. For example, a 5" DBH tree can be treated in less than ten minutes with only three STANDARD MEDICAPS (material cost is less than $3.00 at **retail** value). NEW SUPER MEDICAPS provide even greater economy in treating trees above 12" DBH.

Easy To Use Trunk Injection

INJECT MEDICAPS NOW!

Even if you're in an area where trees are dormant, you can utilize "off season labor" to inject MEDICAPS now. The encapsulated MEDICAP "implants" will be ready to go to work when the tree sap moves upward.

Creative Sales, Inc.

200 So. Main Fremont, Nebr. 68025

STH74-8 A

Kellogg bags it!

NITROFORM*

organic nitrogen

The slow-release nitrogen that helps turf keep its good looks without repeated fertilizing. Use it to save labor.

Turf and Horticultural Products, Synthetics Dept. Wilmington, Delaware 19899

HERCULES INCORPORATED

*Registered trademark of Hercules Incorporated.

For More Details Circle (155) on Reply Card

STH74-9 A

Lakeshore bags it!

NITROFORM*

organic nitrogen

The odorless nitrogen. Has guaranteed performance, too.

Turf and Horticultural Products, Synthetics Dept. Wilmington, Delaware 19899

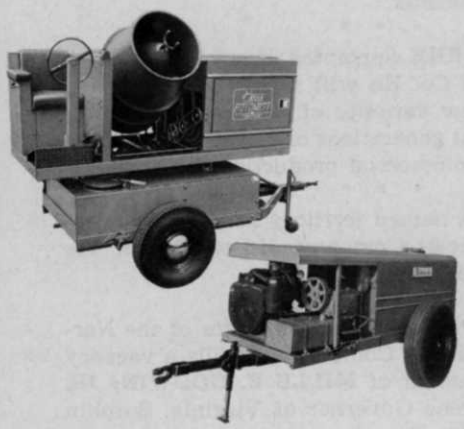
HERCULES INCORPORATED

*Registered trademark of Hercules Incorporated.

For More Details Circle (171) on Reply Card

For More Details Circle (156) on Reply Card

Seasonal leaf drop is one thing...



...but loss of leaves through bark and leaf infestation is quite another. To protect your shade trees, a well-planned spray program is well worth the time it requires — and BEAN spraying equipment is the best way to go. FMC's Rotomist controlled-air sprayers for example, are engineered to give you maximum penetration and assure you the best possible coverage and protection. FMC's Royal high pressure sprayers also afford you the versatility and performance you need...are available skid-mounted or in trailer models, with hose and gun for effective shade tree applications. You won't find any better tree protection than with BEAN sprayers. Contact your nearest FMC representative for a demonstration today, or write:

FMC Corporation
Agricultural Machinery Division
Jonesboro, Arkansas 72401

FMC Environmental Equipment

For More Details Circle (165) on Reply Card

Quality

in looks, ability and performance in the field.

And, Jacklin Seed Company built its reputation for quality with top performance in the field year after year. Jacklin is your reliable answer to seed performance. When you order seed, specify JACKLIN SEED.

JACKLIN PRODUCES:
Merion, 0217® Fylking, Glade, Cheri, Nugget, S-21, Newport, Delta, Geary, Park, Six, and Troy Kentucky bluegrass; Rathdrum and Reubens Canada bluegrass; Norlea Perennial ryegrass, Public and private varieties of Creeping Red, Nova rubra, Chewings, and Hard fescues.

And has produced on a contract basis: Pennfine, N.K. 100, N.K. 200 and Pelo Perennial ryegrass. For these quality Jacklin seeds see your local wholesale seed distributor. Jacklin is also a prime* contract producer of: Warren's A-34, O.M. Scott's Windsor and Adelphi Kentucky bluegrass.
Jacklin has built a reputation of fine quality and service for over 30 years. You can count on purity of content, high quality and sure germination.

*Available only through breeder and owner outlets.

Jacklin® Seed Company

Division of the Vaughan-Jacklin Corporation

industry people on the move

EDWIN M. TAYLOR appointed chief designer for Friend Manufacturing Corp.

* * *

BEN KELKER appointed sales representative in northern Wisconsin for Lely Corporation.

* * *

DICK ZUCCARINI joins Amvac Chemical Corp. to help organize their new aquatic nuisance control dept. He was formerly western regional manager for Applied Biochemists.

* * *

ROBERT V. MITCHELL appointed superintendent of golf and grounds for The Greenbrier. He previously was golf superintendent of the Portage Country Club, Akron, Ohio.

* * *

DR. S. ROBERT COLBY joins the agricultural chemicals division of ICI America Inc. He will direct programs involving plant growth regulators and herbicides at the company's Goldsboro, N.C. research center.

* * *

RAYMOND P. STORTI, named marketing manager of the turf products division, Hahn, Inc. He was formerly general manager with Toro Pacific Distributing Company.

* * *

DR. DONALD W. GATES, GARRY D. MASSEY, DAVID J. PROCHASKA join 3M Company as agricultural research scientists responsible for development of agricultural chemicals.

* * *

J. DAVID DeKRAKER is now director of marketing planning for the agricultural division of Ciba-Geigy Corp. In other company moves **JOHN A. MULLINS, JR.** named assistant director of sales for the division; **DR. EVERETT COWETT** appointed director of technical sales services; **FRANK L. CLUNAN** to manager of distribution services in logistics; **GENE GENTRY** to director of product quality assurance; **PETER L. PLATZ** to manager of contract manufacturing; **DR. C. GLENN BRADLEY** to manager of chemical studies; **DR. BILL G. TWEEDY** to manager of residue investigations.

* * *

AMBROSE D. DEGIDIO has taken over management of all Toro-owned distribution points. He replaces **ROY W. SIMPSON** who resigned to become an independent Toro distributor in Phoenix.

* * *

DR. JOHN H. THORNE, appointed director of research for the Jacklin Seed Co. He will supervise the testing and evaluating of new varieties of turfgrasses, monitor breeder fields and test generations of mother plants from initial discovery to commercial production.

* * *

JAMES A. BERGS, named territory sales-service representative for Mathews Company. He will cover the eastern half of Minnesota.

* * *

SAMUEL R. SUTPHIN, elected a director of the Norfolk and Western Railway Company. He fills a vacancy caused by the resignation of **MILLS E. GODWIN, JR.** who resigned to become Governor of Virginia. Sutphin is from Zionville, Indiana.

Davey comes equipped to give you a head start in 1974.

Get the jump on busy spring and summer seasons. We've got everything it takes to put you ahead of schedule: custom-built trucks, hydraulic cranes, power saws, brush chippers, and other high production tools.

Our crews are carefully trained and supervised by experienced men who know how to use this specialized equipment efficiently and safely.

They'll help you get a lot of work done before parks, golf courses, and other civic and recreational areas get crowded.

They know how to prune deadwood and open up vistas, remove dangerous trees, plant new trees, grind stumps below ground level, remove unwanted growth from paths and fairways.

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(from page 26)

mowing and watering, is not noticeable.

At times what you don't do is as important as what you do. Until about 15 years ago, for example, I spiked the fairways, but have since discontinued the practice. I believe fairway spiking: encourages Poa *annua* growth, causes unnecessary damage, more work, is unsightly and angers players who are unhappy with the playing conditions. However, aerification can have a place in turf management when used properly. A thatch machine such as Ryan's Mataway will assure better and tighter turf so fairways can be cut at a one-half-inch championship height.

No matter what a superintendent does or doesn't do, no matter how good a businessman he is or what precautions he takes, Nature can defeat him overnight. We can't be cocky in this business because our jobs are 99 percent luck and one percent common sense. But I love my work and enjoy competing with Nature. If I had to live my life again, I wouldn't change a thing.□

Bermudagrass Care Requires Many Inputs

Standard management practices of irrigation, vertical mowing, and fertilization must be carefully programmed with chemical weed control to maintain weed-free, high quality bermudagrass, as shown by results of research done at the University of California, Riverside.

"If the interrelationships and timing of these practices are not considered," says W. W. Wright, research associate, "the results may be undesirable with respect to weed control and turf appearance."

Wright reported on the effects of cultural and chemical renovation of weed-infested bermudagrass turf during the American Society of Agronomy.

He conducted the research in cooperation with Dr. V. B. Youngner, professor of agronomy, UCR, and Dr. V. A. Gibeault, agricultural extension environmental horticulturist at the Riverside campus. The study was partially supported by a grant-in-aid from the U.S. Golf Association-Greens Section.

"In a randomized split, split plot experiment," Wright said, "irrigation, vertical mowing, nitrogen fertilization, and chemical weed control were evaluated for the renovation of a weed-infested common bermudagrass turf. These factors were considered from the viewpoint of long-term effects and maintenace of an improved condition once it was attained."

The researcher reported that the following results were observed after two and one-half years of regular treatment: over all the cultural practices, the highest quality turf was obtained with the use of the herbicide Kerb, although certain broad-leaf weeds were not controlled. Both fall and spring vertical mowing increased weed populations despite herbicide applications. For this reason vertical mowing, unless done for reseeding or thatch removal purposes, is a questionable practice. Fall vertical-mown plots contained considerably more weeds than spring vertical-mown plots. Soluble and slow-release fertilizers gave comparable turf quality. The frequency of irrigation influences the performance of chemicals and the effects of other cultural practices.

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GREEN IS FOR GO

(from page 66)

earth look at the production and marketing of this crop of yours — turfgrass being one of our most important basic crops and will become even more important in the future.

Our open spaces are not merely for the eyes to behold, alone. A bit of grass, however small the plot, has a practical as well as an aesthetic value. The planners of tomorrow would indeed have "'open spaces" between their ears if they did not include in their planning, open spaces for our fast growing population, concrete is nonproductive! We must save our farmlands, for, in the future, there will be more and more demand placed upon the tillers of the American soil.

The number of Maryland farms and the percent of land area used in agriculture continues to decline. (Table 2).

There are presently approximately 16,000 farms in Maryland according to Dr. George Stevens of the University of Maryland's department of agricultural economics. Although the number of Maryland farms is on the wane, that is no reason, no justification, to tax the remaining farmers to death.

Table 2. The number of farms and the percent of Maryland area in farm land.

Year	No. of Farms	Percent of Area in Farms
1930	43,203	69
1940	44,412	69
1950	42,110	66
1964	20,760	50
1969	17,000	46
1974	14,000	43

Modern agriculture is a business enterprise that requires heavier, more complex and expensive machinery. Modern agriculture needs labor that has almost priced itself out of the farm market and, therefore, is becoming more and more difficult to find. Today's farmers need and deserve a tax break as much or more than any other sector of our economy. Sod production, the fifth largest agronomic business in Maryland, is perhaps the one — because of its unique production expense — that stands to suffer most from inequitable assessments and tax laws.

I believe, that land use should be a local matter, but one which must be treated equitably at the state level with regard to assessments and taxation. Groups such as yours here in Maryland and your sister organizations in other states must be public information experts as well as agricultural experts to insure equitable treatment and orderly growth of your business.

As farmland located near the big cities and suburban areas becomes too "taxpensive" to farm, the erstwhile agri-businessman will find himself looking for another job. Perhaps farming is all he has ever done. Perhaps he or his family don't want an urban-suburban life. But often there is no other choice. Mr. Farmer will have been taxed off his land and away from his chosen way of life.

Agriculture is one business that is extremely difficult to relocate. When a farmer moves, he leaves his raw material, the precious land, behind him. When a farmer moves, he is uprooting not only his means of making a living, but his way of life as well. His home, his church, his school, his family, his business and friends are all left behind. But the landless, luckless farmer is not the only one who suffers.

The lack of sound statistical data is obvious in any attempt to describe the importance of turfgrass maintenance on the economy of the State of Maryland. As I have point-

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ed out, the maintenance portion of the industry is a small fraction of the total picture. Machinery costs, increased land values, transportation and installation costs to get sod from the field to the final consumer, golf car and pro shop revenues and other related revenues created by the Maryland Turfgrass Industry, have not been considered. The intangible effect of turfgrass on the health, happiness, and well-being of Marylanders cannot be determined, its dollar value in preventing erosion and purifying the air we breathe is incalculable.

According to the December 1972 issue of "The Agronomist:" "'What does the future hold for the turfgrass industry in Maryland? The population is increasing very rapidly in Maryland and there is a great need for new homes, golf courses, and parks. The need for turf will be great and the future looks very promising for the turfgrass industry in Maryland."

Statistics alone cannot and do not tell you the entire story of the countryside in Maryland. To appreciate the real picture of the wonderful land beyond the city limits, you must see it, hear it, feel it, smell it, and breathe it. And lay on it, as I do day after day — put your EAR to Mother Earth and listen to the beautiful sounds of nature — "What a great thrill".

Turfgrass is a most important part of that beautiful, three dimensional picture of land, sea and sky that is our Maryland heritage, I hope that through your efforts in the production and improvement of turfgrass, those signs we see in such plentiful numbers, "Keep off the Grass", will someday soon, no longer be necessary.

This is one of my favorite poems about land which sums up my feelings.

I AM LAND
Lynn Pinkerton

I am land
I am trustworthy, when the friends and fortunes of men have wronged you, I will remain loyal.
I am the producer of food, the foundation of factories and banks.
I provide a birthplace for your offspring, a home for your family, and a shroud for your dead.
I have absorbed the sweat and secrets of your forefathers as they toiled over me.
I have witnessed the discovery of fire, The birth of Christ, and man's flight to the moon.
I give you comfort when the world has wronged you, strength when your path becomes rough, and the solitude needed for self-evaluation.
I am a living, breathing entity, reproducing year after year, growing in strength generation after generation.
I am all on earth you can believe in, while all things wither and decay — I survive.
I am land.

Virginia's Jack Kidwell Talks Progress And Sod

J. L. (Jack) Kidwell of Culpeper, Virginia, has been "high" on grass for the past 15 years.

And it's an easy "high" for this Virginian because grass, more specifically sod, is his business.

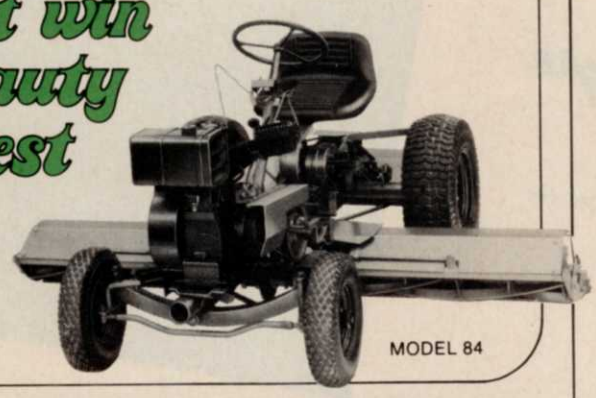
He has 900 acres in sod on farms in Culpeper and Mecklenburg counties, making him one of the largest, if not the largest, sod producers in the state.

Kidwell's customers include housing, institutional and government projects. In Blacksburg recently, where he was among 200 persons attending the 17th annual Virginia Tech Turgrass Field Days, Kidwell saw some of his turf product at the new Marriott Inn, located on the edge of the Tech campus.

The professional sod producer is

(continued on page 76)

A workhorse won't win a beauty contest



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Dear Sir:

I am the greens superintendent in the Town of Tonawanda, which has two eighteen hole golf courses. These are both public courses, Sheridan and Brighton.

Sheridan, 6785 yards par 71 and 13 water hazards. Brighton with 6500 yards par 72 and no water hazards. I am going on my 19th year with the Town in charge of both golf courses. We have 40 greens including nursery beds and putting greens. Strictly solid seaside bent, average green 5,000 square feet. In the years from 1960 to 1965 we were getting 68,000 to 79,000 rounds of golf on both courses. So I was told by a fellow superintendent to start overseeding with Penncross bent, to reduce the poa annua I had in the greens. Started this program, overseeding 2½ pounds per green. I could see a different color in the greens after a few years. I still overseed and find the play increasing. Since 1972 we've had 108,000 rounds of golf on both courses, this is the record of rounds for a public course. The Penncross bent is taking over, and holding up very good under heavy play. This makes the golfer happier and I am happy. I am still overseeding with Penncross bent and someday hope to have Penncross bent tees on a public course. Thank you.

Signed: Chester J. Krempa

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The growers of Penncross Bentgrass seed are very happy with the acceptance you, the Golf Course Superintendents, architects and club officials have given to Penncross. As growers, we are doing our best to provide a plentiful supply of Penncross seed to meet the demand you have created by utilizing Penncross on tees, fairways and greens.

Our Penncross fields take a great deal of preparation prior to hand planting the stolons. Hand rogueing the fields during the growing season is also expensive and requires tedious work. We insist on giving you the highest quality seed available and we will not sacrifice quality for quantity.

We ask for your patience while we expand our production to take care of the increased demand. Our crop plantings will be expanded 25 percent this fall and this should result in a good supply of Penncross seed for next summer's harvest.

In the meantime, don't accept a substitute. We will maintain our quality seed production and we will make every pound of seed that meets the quality standards available to the market. If your supplier is temporarily out of seed, please be patient. Weather conditions have caused a 25% crop failure, so your supplier is doing the best he can, and we will do the best we can to spread it equitably.

Thank you for planting more and more Penncross. We will do our very best to keep your confidence and to provide you with a plentiful supply of high quality Penncross seed.

Sincerely,

BILL L. ROSE, *Chairman*
Penncross Bentgrass Growers Association

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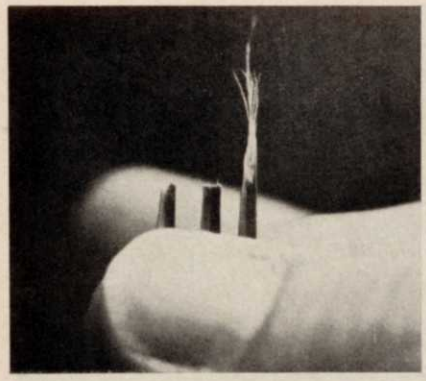
Can you tell ryegrass from bluegrass?

(Careful.)



This photo shows *two* fine-leafed ryegrasses and one Kentucky Bluegrass. The grass on the right is obviously a ryegrass. Of the other two, which is the ryegrass and which is the bluegrass?

Ok, the one in the middle is fine-leafed Pennfine Perennial Ryegrass . . . clean-cut and so fine-bladed it looks like bluegrass. On the left is Pennstar Kentucky Bluegrass, perhaps the best all-around turf grass available today.

If you had trouble telling them apart, you have an idea of the compatibility of these two grasses. Pennfine Perennial Ryegrass and Pennstar Kentucky Bluegrass. They work together. Beautifully. For more information write Pennfine/Pennstar, Box 923, Minneapolis, Minn. 55440.

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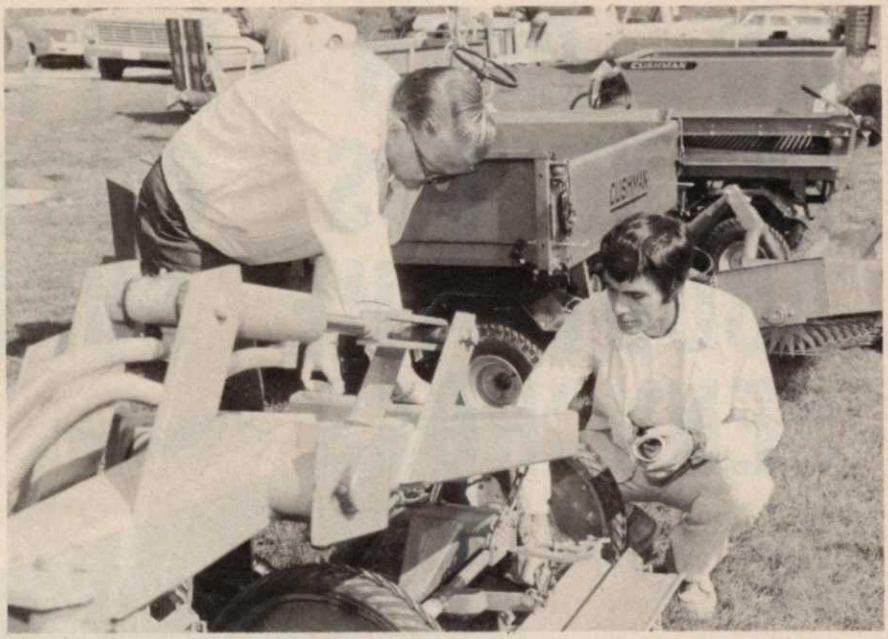


Jack Kidwell (r) inspects turf equipment during Virginia Tech Turfgrass Field Days. At left is Tom Harris of Gaithersburg, Md. Kidwell is president of the American Sod Producers Association.

PROGRESS AND SOD

(from page 73)

among 30 in Virginia, many of whom were on hand for the turfgrass event on the Blackburg campus. The field days, for professionals interested in turfgrass production and management, is sponsored annually by Tech's extension division and department of agronomy.

Virginia's sod producers, according to Kidwell, are generally behind the rest of the nation's sod farmers, but he believes that they will soon come "into their own." He views the research being carried on at Virginia Tech's Turfgrass Research Center will help to bring th state's sod producers up to and beyond the national average.

As president of the Virginia Turfgrass Council and the American Sod Producers Association, Kidwell is eager to see Tech's program continue and expand. The four-year-old center itself is partly the result of his council's support. The council also provides a $4,800 scholarship annually for a Tech graduate student in agronomy.

This type of support, Kidwell said, benefits the student, the university and the turf industry.

The council, he said, has just completed a survey of the state's turf industry, seeking such information as the number of acres presently in maintained turf, the amount of money spent for turf, fertilizer and feed, in addition to educational needs, future growth and employment prospects.

The $25,000 for the survey, he said, came from, among other sources, the U.S. Department of Agriculture and the Virginia Agricultural Foundation.

As for educational needs, Kidwell envisions a much broader program encompassing the university and public schools as well as the general public. The Virginian views turfgrass education as basic to any understanding of the environment or ecology.

Few persons realize, he said, that sod and grass, like trees, helps to remove pollutants from the air and return clean air in their place.

Ohio Sod Producers Hold Annual Meeting

The Ohio Sod Producers Association held their annual meeting in November in Cincinnati, Ohio, in conjunction with the Ohio Turfgrass Conference and Show. Highlights of the meeting were the election of officers and a discussion of the fertilizer situation for 1974.

Ron Giffen, sales manager, Lakeshore Equipment and Supply Company, reviewed the fertilizer demand and supply situation. There is an increased demand throughout the world and he predicted a 1 million ton shortage of fertilizer for 1974 in the United States alone.

Supplies have been dwindling due to old manufacturing plants closing down, lack of construction of new facilities, low profitability and price controls, and the shortage of petroleum products to make nitrogen.

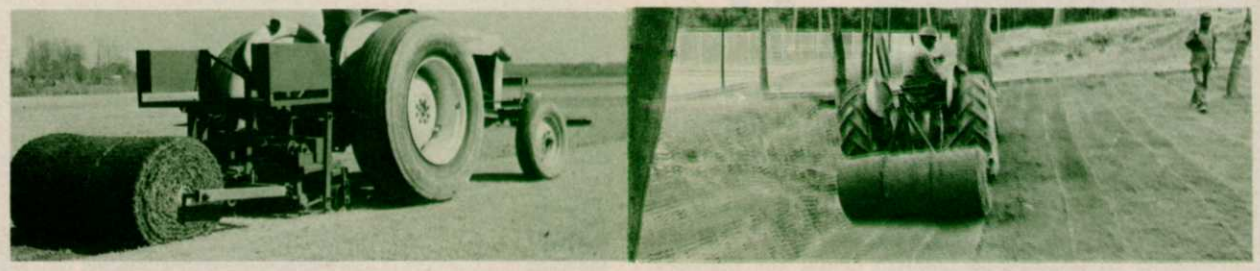
The higher demand and lower availability of fertilizer will create a very unstable price structure through early 1974, said Giffen. He predicted a 40% increase in fertilizer costs over spring, 1973.

He concluded by suggesting that sod growers buy immediately and take delivery as soon as possible, reduce their need for 1974, and improve equipment calibration to avoid any over-application.

President Ches Augspurger then announced the OSPA slate of officers for 1974. New officers elected were: Don Figurella, Besturf Sod Farms, president; Paul Florence, Millcreek Sod Farm, vice president; John Kramer, John Kramer and Sons, secretary; and Howard Kester, Trojan Turf, treasurer. Directors are Cecil Collings, Green Valley Turf Farms; Ivan Patterson, Patterson-Hunn Sod Farm; and Cliff Gregloire, Medina Sod Farms.

President Figurella spoke briefly to the assembled sod growers. He urged greater membership participation in OSPA and announced the executive committee would be meeting soon to establish goals and priorities for 1974. The meeting concluded with a report on activities of the American Sod Producers Association by Director Paul Florence.

President meets president . . . Don Figurella, Besturf Sod Farms and new president of the Ohio Sod Producers Association discusses the future of the industry with Ches Augspurger, Cincinnati Turfgrass Nursery, Inc. and outgoing president.



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Ronald W. Fream

Roy Coates

Golf Course Builders Of America Hold Third Annual Meeting

How the design of a golf course can affect the speed of the golfer's playing time, and the problems of building golf courses were among the topics at the 3rd annual dinner of the Golf Course Builders of America in Anaheim, Calif.

Roy Goates, golf manager for the City of Los Angeles Recreation and Parks department spoke on golf course design and speed of play, while Ronald W. Fream, a golf course architect from Los Gatos, Calif., told of the problems of constructing foreign courses. Fream's firm, Fream/Storm Associates, has designed a number of overseas courses.

On the domestic construction front, dinner guests heard a panel titled "How to Build It", featuring contractors Robert E. Chakales of Richmond, Va., and Nick A. Siemens of Fresno, Calif. The moderator was Frank Underwood, a golf course contractor from Bowie, Texas, and the 1974 president of the Golf Course Builders of America.

Economics of golf course construction were covered by Don A. Rossi, executive director of the National Golf Foundation, Chicago. His topic was "The Golf Market."

Undercover Agents Fight Green Industry Crime

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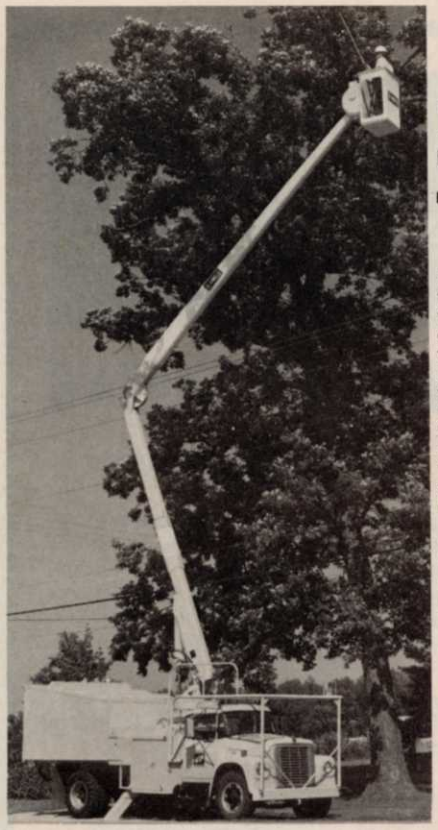

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According to Charles Wessel, vice president of Interstate Service Corporation, a Globe Security company (AMEX), the rather recent turnabout in industry's attitude towards the undercover worker has resulted in increased protection against the mounting cost of crime, now rising above the $5 billion figure in the U.S. alone.

"A short while back," Wessel said, "an undercover agent was considered to be a spy who would 'rat' on his co-workers. He was hired as a last recourse, only in the case of an unsolved grand theft, or a very large, steady drain on the company's profits that was obviously the work of an inside thief."

"Then, likely as not," Wessel explained, "when the thief or wrongdoer was caught, he would be let off without pressing charges because of misguided judgment about company morale or concern for the man's family. This permitted him to be free to join another company and continue his lifestyle of crime, probably becoming more expert in it as his experience grew.

"This situation was compounded by the fact that, as the size of business grows, so does the rate of crime. It is almost impossible today for a head of a medium-sized or large-sized company to be fully aware of those activities of his employees that are detrimental to the company's good financial health.

"This includes everything from the disappearance of cash or merchandise, inventory shortages, a rise in sales without an accompanying rise in profits, poor production that may be the result of timecard cheating, excessive overtime, unauthorized discounts, shortages in merchandise, excessive complaints from customers, and unexplained drops in company morale.

"The acknowledgement on the part of the farm and industrial equipment industry of the role of the undercover agent has done much to implement management's new get-tough policy on crime," he said.

"And," Wessel went on, "a clearer understanding on the part of management or just who the undercover man or woman is and just what the duties are, will most certainly result in increased use of the agent and increased savings on the part of management."

He suggests that undercover agents be placed at strategic jobs in the company, either in the area of suspected crime, or in a situation where they have freedom of movement to make widespread observation more readily.

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Another fine product of Jacklin Seed Company

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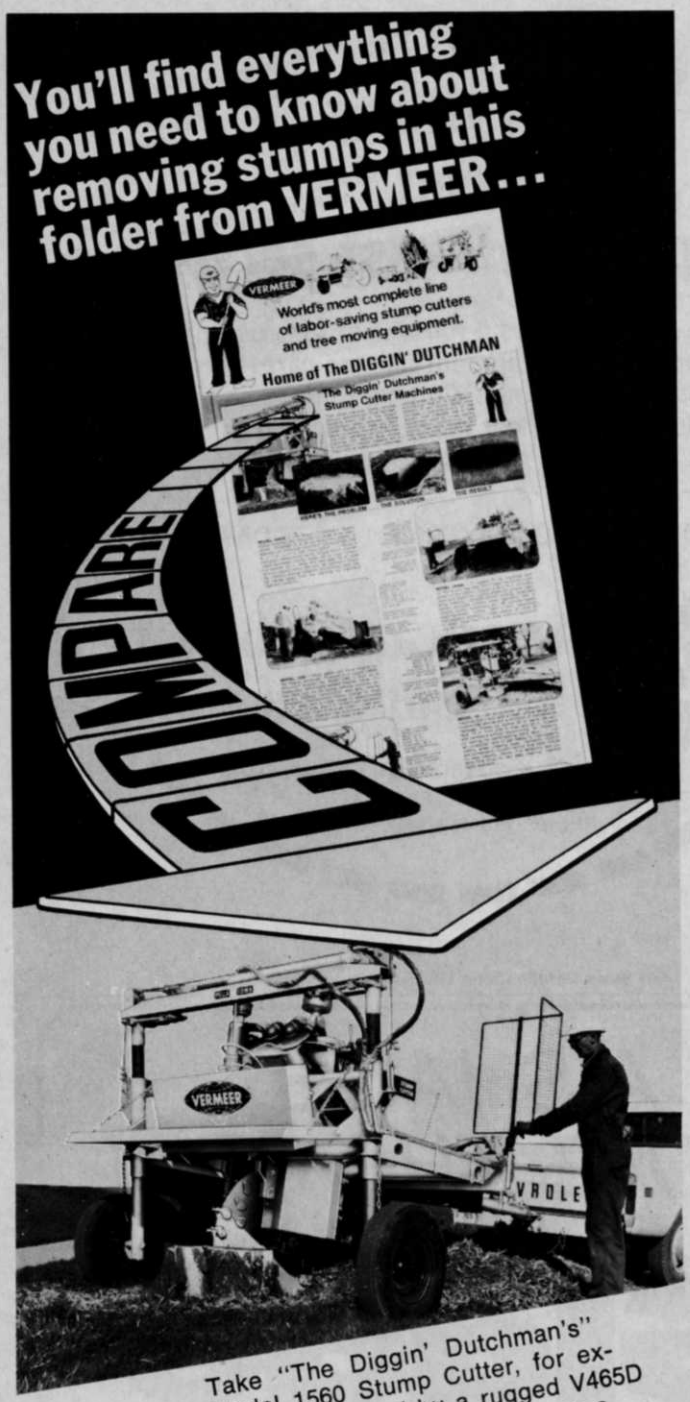

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—insect report—

TREE INSECTS

SPRING CANKERWORM
(Paleacrita vernata)

NORTH DAKOTA: Larvae defoliated Siberian elm single-row shelterbelts in Mayville area, Traill County. Some trees now 80 percent defoliated. Additional defoliation will occur; some shelterbelts expected to be 100 percent defoliated.

GEOMETRID MOTH
(Lambdina athasaria athasaria)

PENNSYLVANIA: Moth flight heavy over area of about 1.5-mile radius two miles east of Clymer, Indiana County, Junel. Most larger hemlocks dead over area of 1-mile radius.

OAK LEAFTIER
(Croesia albicomana)

MASSACHUSETTS: Larvae almost completely defoliated oaks in some areas of Hampshire and Hampden Counties.

DOUGLAS FIR TUSSOCK MOTH
(Hemerocampa pseudotsuga)

OREGON: Larvae began to hatch in foothills of Mt. Emily near LaGrande, Union County. Treatment planned for 25,000-40,000 acres in LaGrande area; first to begin within next 7 days. All timberlands to be treated are privately owned.

BENEFICIAL INSECTS

FLOWER BUG
(Orius insidiosus)

MARYLAND: Very active in Eastern Shore sweet corn fields. Ranged 20-30 per 100 plants in most fields. Heaviest infestation 87 percent. Species good egg and small larval control agent.

CHALCID WASP
(Brachymeria intermedia)

WEST VIRGINIA: Released 2,000 adults of this pupal parasite of *Porthetria dispar* (gypsy moth) in Jefferson County and 1,000 adults in Berkeley County.

PAINTED LADY
(Cynthia cardui)

WASHINGTON: Several adults but no eggs or larvae seen in tansy ragwort. At Ambay, Clark, County, adults emerged 3-4 weeks earlier than normal.

CHALCID WASP
(Brachymeria intermedia)

WEST VIRGINIA: Adults of this pupal parasite released in Jefferson, Berkeley, Hamshire, Pocahontas, and Hardy Counties.

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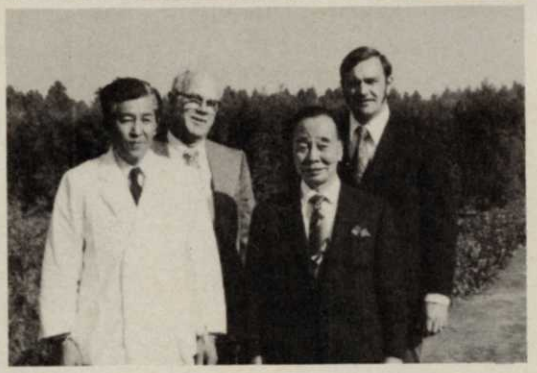

The Chiba facility (top left) is quite large. Here the U.S. duo discuss injection with Mr. Nishiyama (1) and Mr. Kikuchi. Later, they view an antiquated from of inject (top right) currently being used. Walt Money and Dale Dodds then visit the Manazuru Prefecture Park southwest of Tokyo (left). That's Dale on the right. They meet with Dr. Yonabayashi (above left), director of Chiba Prefecture Forestry Exp. Sta., and Mr. Kikuchi, president of Maruwa Boussan Co.

Mauget Tree Injection Officials Visit Japan

The manufacturer and a distributor of the J.J. Mauget Company recently toured selected parts of Japan to witness the results of tree injection.

Dale Dodds and Walter Money, Guardian Tree Experts, Inc., visited Tokyo in late 1973 to inspect tree injection of Japanese trees. Their host during the week tour was Mr. Kikuchi, president of Maruwa Boussan Co., a trading company in Tokyo, and his assistant Mr. Nishiyama.

Areas visited included the Emperor's palace garden, the Japanese department of agriculture, Chiba Prefecture Forestry Experimental Station north of Tokyo, and the Manazuru Prefecture Park.

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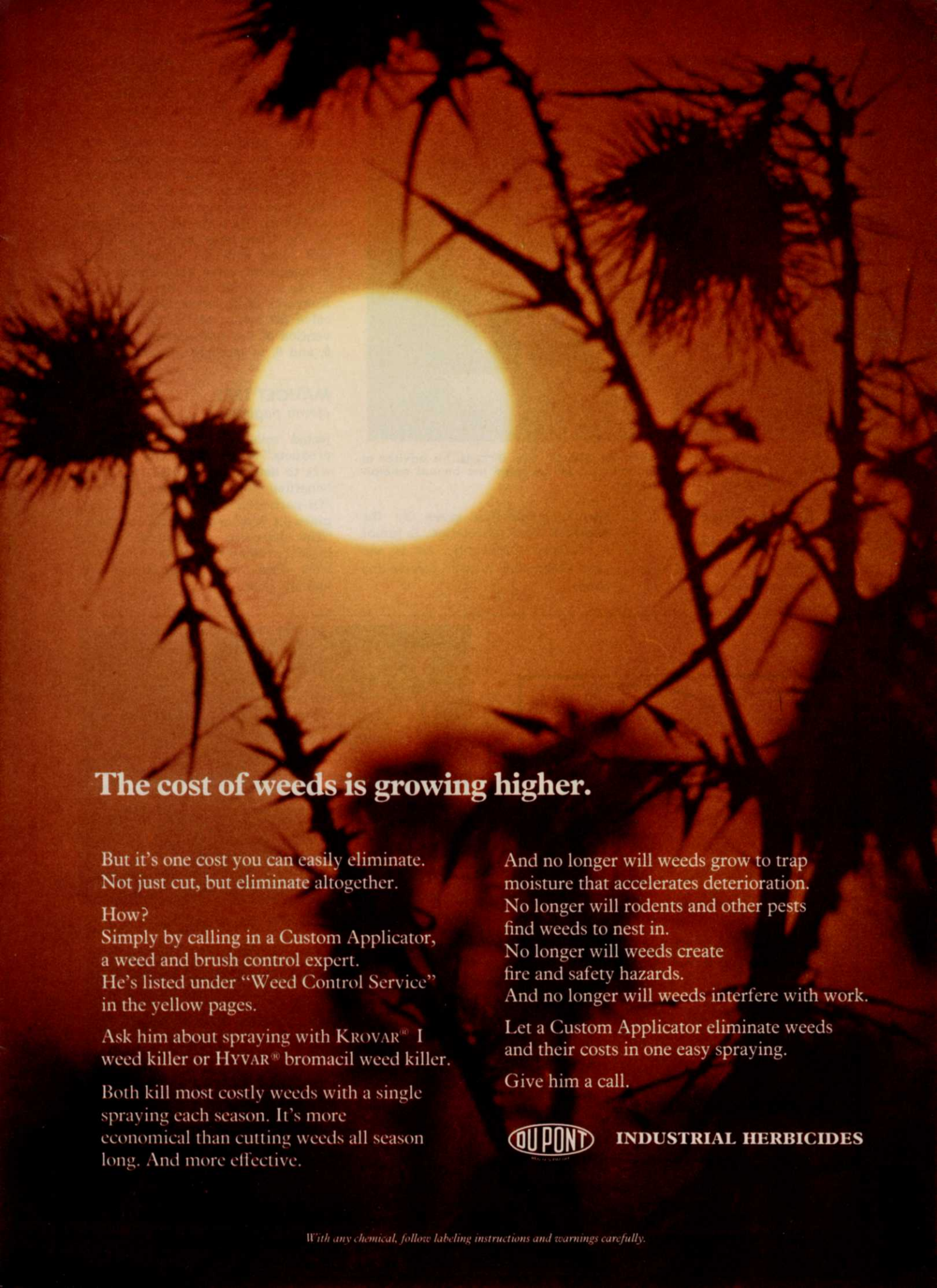
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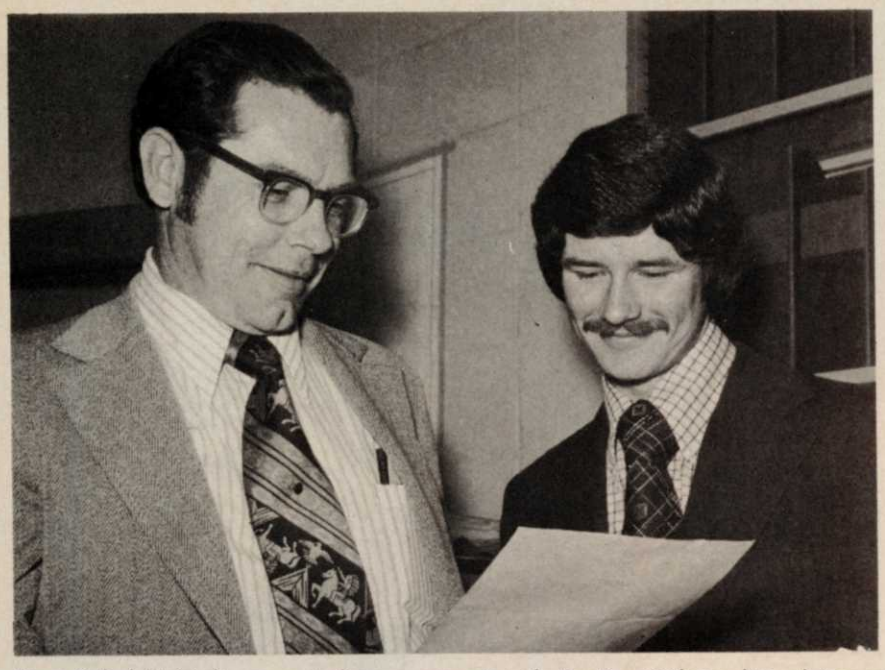

Gary Kobylski (r) discusses turf management with Dr. Ray Dickens, his advisor at Auburn University. He is the first Alabamian to be awarded the annual scholarship given by the Southern Turf Association.

Alabama Student Wins Southern Turf Scholarship

W. Gary Kobylski, Tallassee, was recently awarded the annual academic scholarship given by the Southern Turf Association. A junior at Auburn University, he is the first Alabamian to ever receive the honor.

The Southern Turf Association is a professional organization made up of persons in the turf grass industry. The Group is made up of ten southern states.

Upon graduation, Kobylski will become one of the first students to graduate in the new turf management curriculum offered through the department of agronomy and soils at Auburn. He is presently president of the University Agronomy Club, and plans a career in golf course management after graduation.

The son of Mr. and Mrs. Henry A. Kobylski, of Tallassee, Gary will receive his award at the annual convention of the Association, March 4, 5, and 6, in Memphis, Tennessee.

MAUGET TREE

(from page 84)

jected several trees with Mauget products," says Dodds, "Our purpose was to determine if these trees had benefited from the treatment."

"Of particular interest are the black pines in Manazuru Park," he said. "The Japanese are fearful of an insect problem in these historic trees. Tests with Injecticide are looking good."

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— classifieds —

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

Rates: All classifications 50¢ per word. Box number, $1. All classified ads must be received by Published the 10th of the month preceding publication date and be accompanied by cash or money order covering full payment.

HELP WANTED

SUPERINTENDENT OF MEMORIAL PARK A leading midwest cemetery organization desires the services of a high calibre person with capabilities and standards that will justify earnings of $15,000 to $18,000 per year. The position requires the ability to hire, supervise and train personnel in handling the internment service, maintenance of turf, nursery, buildings and fleet equipment and in land development. Proven ability necessary in labor supervision and relations with the public. Close communication with management will provide the support necessary for success. Send hand-written resume', in detail, of the above mentioned subjects that would indicate your practical experience. Box 114, Weeds, Trees & Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

GREAT OPPORTUNITY FOR THE MAN WHO LIKES TO BE HIS OWN BOSS!

National leader in tree service, operating from Maine to Florida, offers excellent opportunity in sales and management. Ability to work with public and personnel is important. Must be experienced in tree work or horticulture. Excellent starting salary, expenses and fringe benefits. Intensive training course and outstanding growth potential. Send resume of experience or educational background to:

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PROGRESSIVE COLORADO Sod Farm seeking energetic, knowledgable, and responsible personnel for: sod production, automated harvesting, landscape and sprinkler irrigation installation and design, maintenance and repair, and sales. Send complete resume to Don D. Schlup, Scien-Turf-ic Sod Farms, 7321 E. 88th Ave., Henderson, Colorado 80640.

HELP WANTED

Position available for mature individual, with past operational experience, interested in organizing, developing and operating an ornamental shade tree and lawn division for a large, established New England Pest Control company. As this new division grows, your promotional prospects and salary will grow, as we are an aggressive and expanding firm. Top management status will be given to the right person, with proven background in horticulture, entomology, agronomy or related fields. College degree desirable. All replies confidential.

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DISTRIBUTORS for D. J. Andrews, Inc. stump cutter teeth, pockets and bolts. Best wholesale and retail price in U.S.A. Add to this exclusive area, local advertising at our expense, etc., and you have our story. D. J. Andrews, Inc., 17 Silver St., Rochester, N.Y. 14611. Call 716 235-1230, or 716 436-1515.

SALESMAN-SUPERVISOR for Tree Department B. S. plus minimum 5 years experience. Hospitalization, vacation, pension, company car, salary plus commission. Heyser Landscaping, Inc., 400 N. Park Ave., Norristown, Pa. 19401.

PERSON TO SUPERVISE harvesting operations for large grower in Ohio. Duties include sales and service work. Reply giving details of experience and salary requirements to Box 110, Weeds Trees & Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

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Of those surveyed, 88 percent of WTT readers use wells and lakes as the main water source for golf course irrigation

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PENNSYLVANIA AND N.E.—Graduate horticulturist desires interesting and rewarding position. Fluent with fertilizer, sprays, plants, etc. Interested in garden center operation. Reply to 115, Weeds, Trees & Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

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DOUBLE EDGE sod cutter blades. Will fit any Ryan sod cutter. Works like double edge razor blade. Cuts much more sod per blade. Made to bolt on both ways. $24.00 plus postage. New automatic sod loaders for direct loading to pallets, trucks or trailers. No workers needed on ground. Both products developed and designed by Hadfield. Write or call Glen Hadfield, 4643 Sherwood, Oxford, Michigan 48051. Phone 313 628-2000.

FOR SALE: Complete tree Service Company, located on West Coast, gross $200,000.00 per year. Year round work. New spray rig, 3-2 ton dump trucks, 3-4 wheel drive pickups, 2 winch trucks, 3 chippers. Several other pieces of equipment. Box 180, Weeds Trees & Turf, 9800 Detroit Avenue, Cleveland, Ohio 44102.

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SOD BLADES for Ryan, Brouwer, Beck. 12" to 18" heavy duty—$15.95, 24"—$17.95. Cut-off blades 12", 15", 16", 18"—$6.00, 20", 24", 26"—$8.00. All prices F.O.B. factory. Please write for complete literature. Money

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TREE APPRAISALS, SURVEYS, loss evaluations and expert consultation services. For names of members of the American Society of Consulting Arborists, Inc., throughout the country, contact: Executive Director ASCA, 12 Lakeview Ave., Milltown, New Jersey 08850.

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WANTED: Brouwer sod harvester. Send particulars to: Thornton's Turf Nursery, R2, Box 72, Elgin, Illinois 60120.

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NOTICE TO CONTRACTORS: THE POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for Contract No. A20 for Landscaping for the James A. FitzPatrick Nuclear Power Plant at Nine Mile Point, Town of Scriba, Oswego County, New York until 10:30 AM Eastern Daylight Saving Time on the 14th day of March 1974, at the Authority's Office, the 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York, New York 10019, at which time and place the proposals will be read aloud.

The principal items of work consist of furnishing and planting the following:

Estimated:
210 Shade Trees, 6 ft. to 12 ft.
39 Shrubs, 6 ft. to 7 ft.
116 Shrubs, 18 in. to 24 in.

All work shall be completed within sixty calendar days from date of commencement. The work shall be started on or about April 1, 1974.

Plans, Specifications and Proposal Forms for the work may be obtained from the POWER AUTHORITY OF THE STATE OF NEW YORK, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York, New York 10019, upon application and prepayment of a fee of Twenty-five Dollars ($25.00) per initial set of contract documents, and Fifteen Dollars ($15.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the office of the Engineer, Stone & Webster Engineering Corporation, 100 Federal Street, 18th Floor, Boston, Massachusetts 02107, and may be inspected by prospective bidders during office hours.

Prospective bidders visiting the site of the work shall first contact the Superintendent of Construction, Mr. C. E. Goodman, at the Engineer's Field Office in Scriba, New York, during office hours. (Telephone (315) 342-1168)

Bids must be made and returned in triplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required for each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

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trimmings

ASTROMOTH—that's what they call 'em. Gypsy moth eggs started to hatch aboard Skylab, said the astronauts. NASA put 500 wild eggs and 500 laboratory reared eggs of gypsy moth aboard the space station. So far several of the wild eggs have hatched. Nothing happened to the lab reared eggs. What does it mean? Simply that gypsy moth eggs can hatch in zero gravity. This could end the moths' normally long hibernation period in USDA's sterilization program. Earth experiments to induce egg hatch earlier have failed. Exposure to zero gravity for a sustained period offers a potential breakthrough.

DIESEL engines account for about 85 percent of the engines purchased in new farm tractors, says the Farm and Industrial Equipment Institute (FIEI). In the larger sizes, the numbers approach 100 percent. Dependence on diesel fuel has been increasing steadily over the years. In 1967, 75 percent of the tractor horsepower provided agriculture was related to diesel.

DAY LENGTH is the only constant environmental variable for insects to key their body functions to and prepare for overwintering. The tiny changes in the day length trigger a "biological clock" within the insect's brain. Changes take place in the body chemistry which result in a condition known as insect diapause. There is an increase in body fat and a decrease in respiration rate and feeding. Reproductive organs in both insect sexes become non-functional. Research from Canada indicates that some diapausing insects produce glycerol which serves as an antifreeze agent, allowing insects to withstand extreme cold temperatures.

ONE MINUTE of time saved each day gives an extra half hour each month.

THE SENSE OF URGENCY to clean up the environment and to make life safer has brought on some hasty governmental actions, says Parke C. Brinkley, National Agricultural Chemicals Assoc. "Much of this action was born of expediency rather than of thoughtful weighing of consequences. Some of agriculture's most valuable production tools have been removed or drastically curtailed. Little more than lip service has been given to the necessity for measuring benefit against risk, or to the fact that certain trade-offs may be in our best interests. We have seen it happen with certain pesticides, fertilizers, growth stimulators, and energy.

"Behind it all is the fact that the environmentalists' view of agriculture has been largely based on its contribution to pollution. There is little understanding of the vital role played by fertilizers and pesticides in the production of food and fiber . . ."

SAFETY IS A FULL-TIME JOB is the second safety film now available through Charles Machine Works, Inc. It's 17 minutes long. The story line centers around a construction superintendent charged with his company's safety program. It's available in either 16mm reels or in Super 8mm cartridges. For more details, contact a Ditch Witch dealer or Tom Tucker, Charles Machine Works, Inc., P.O. Box 66, Perry, Okla.

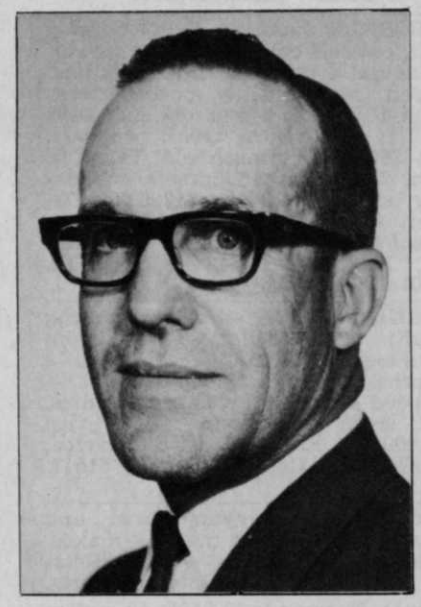
OSHA INSPECTIONS are on the rise. Department of Labor statistics show the weekly average of inspections for November more than double that of a year ago. In November 1973, OSHA issued to employers 5,301 citations alleging 27,870 violations of job safety and health standards. Proposed penalties totaled $680,881. The bulk of inspections continues to be centered around manufacturing and construction. But inspections of agricultural facilities accounted for 27, up 52 percent over the previous year.

LOUISIANA'S PINEY ROOTERS know a good thing when they root it. Seems like almost half of every tree cut for marketing remains unused. Wasted parts amount to about 40 percent of most trees cut. Of this, about 16 percent is in the tree root. Researchers are now looking for ways to use a greater portion of this waste, besides letting the hogs root around it.

YELLOW FOXTAIL

(setaria lutescens)

By DR. WAYNE W. HUFFINE
Professor of Turf Management
Department of Agronomy
Oklahoma State University



Yellow foxtail is a tufted annual grass commonly found throughout much of the United States, except for the cooler northern areas. Sometimes it is mistaken for crabgrass and its occasionally called Yellow Bristlefrass because of its tightly clustered seed heads with greenish, yellow bristles, resembling the tail of a fox. The stems are flattened and the lower parts are often tinged with red.

The seed germinates in late spring or early summer, and the plants reach maturity by mid-summer. After producing an abundance of seed for the next year's infestation, it dies after the first heavy frost in the fall. This unwanted turfgrass weed seems to flourish in most all growing sites except shade.

EDITOR'S NOTE: An 8½ x 11-inch color print of Yellow Foxtail shown at the right is available, at no charge, by writing to: O. M. Scott & Sons Company, Marysville, Ohio 43040.

For More Details On Back Cover Circle (145) On Reply Card

Yellow Foxtail

(*Setaria lutescens*)

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ILLUSTRATION BY J. CONVERSE

L-339

Sometimes it's better to hear it from someone else...

"I use Baron for every acre of bluegrass I grow. Baron gives what you guys call in your advertising. . . a tight-fisted root system. It holds together. . .I can shake it like a rug."

Here's what Berkley Carter of Tuckahoe Turf Farms,* Slocum, R.I. has to say about

baron KENTUCKY BLUEGRASS

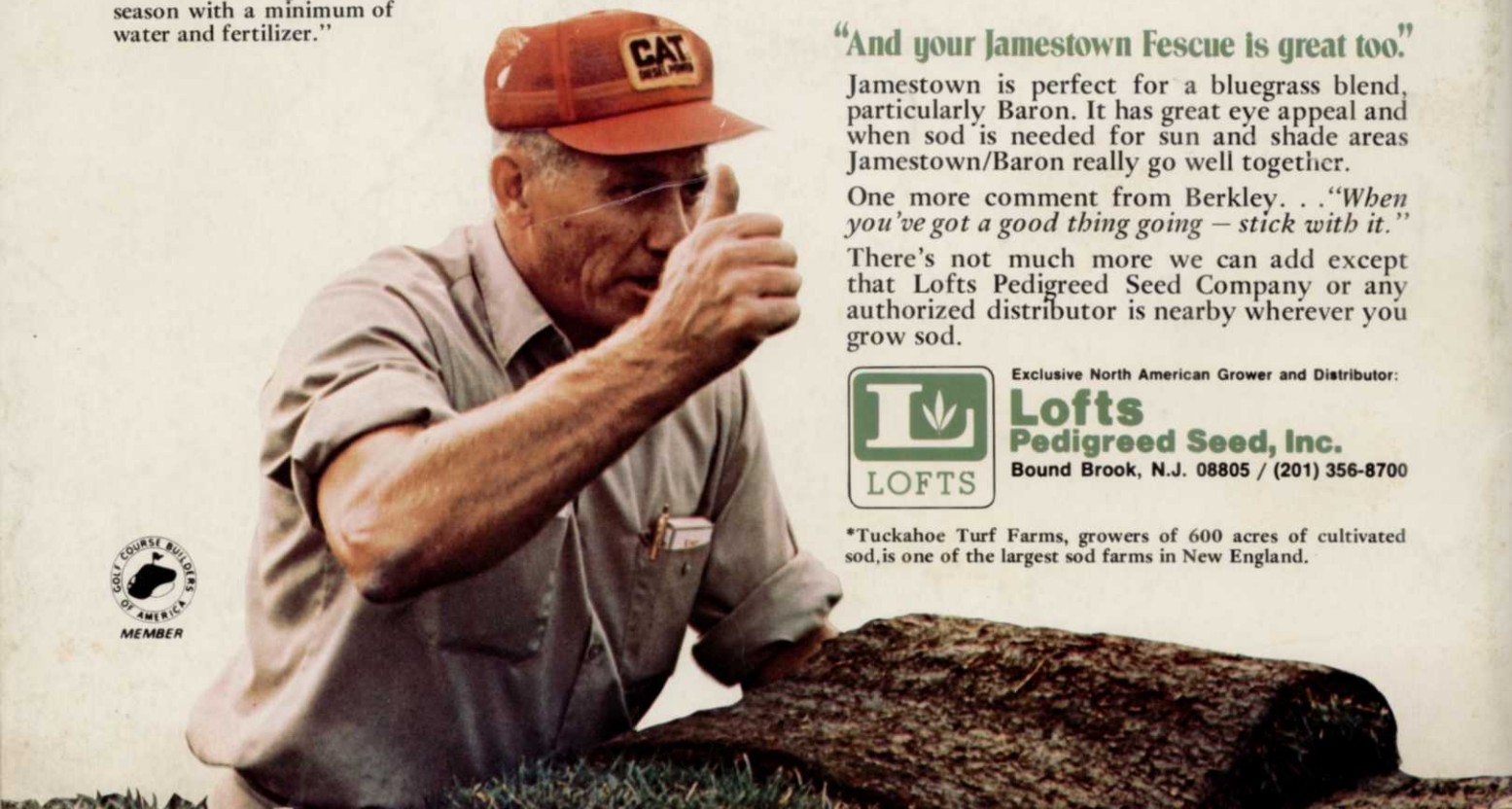
U.S. Dwarf Variety Plant Patent No. 3186

"Of all the bluegrasses, Baron is resistant to more diseases. I've had two different bluegrass fields side by side and Baron always shows more resistance. It holds up its color throughout the season with a minimum of water and fertilizer."

"When I need a herbicide, Baron can take the shocks better without streaks or setbacks. It is an aggressive grass needing only minimum maintenance practices."

"Baron comes up fast. . . that's important to me. I want to see fuzz in 7 days so that the soil is protected as soon as possible."

"It's hard enough getting the seedbed ready; I'm not going to spoil everything with a poor quality seed. I don't know why every sod grower doesn't use Baron."



"And your Jamestown Fescue is great too."

Jamestown is perfect for a bluegrass blend, particularly Baron. It has great eye appeal and when sod is needed for sun and shade areas Jamestown/Baron really go well together.

One more comment from Berkley. . . *"When you've got a good thing going – stick with it."*

There's not much more we can add except that Lofts Pedigreed Seed Company or any authorized distributor is nearby wherever you grow sod.

Exclusive North American Grower and Distributor:

Lofts Pedigreed Seed, Inc.
Bound Brook, N.J. 08805 / (201) 356-8700

*Tuckahoe Turf Farms, growers of 600 acres of cultivated sod, is one of the largest sod farms in New England.

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